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CHRONIC ENDOCERVICITIS

ITS ETIOLOGY, SYMPTOMATOLOGY AND SECONDARY PELVIC MANIFESTATIONS *

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NEW ORLEANS

Endocervicitis is a definite clinical entity of such common incidence and such grave potentialities that more than one writer does not hesitate to affirm that it causes more loss of time and more inconvenience to those affected than any other gynecologic condition. I might add also that there is no gynecologic condition which is the subject of more misdirected and more unsatisfactory treatment. The obvious cause for most of our poor results is that in the past we have directed our treatment along irrational and illogical lines; we have treated the manifestations of the disease rather than its underlying pathologic condition. The rationale of any successful treatment must be based on the structure, function and actual pathologic changes of the affected organ, and my desire to emphasize these facts must be my apology for presenting a subject that of necessity lacks originality and is more or less elementary.

Only chronic endocervicitis of intrinsic origin will be considered, since the acute condition, being rarely recognized as such, tends to become chronic, and since extrinsic or secondary endocervicitis is always a manifestation of primary pathologic change elsewhere in the pelvis. Moreover, the emphasis will be largely on the clinical aspects of the disease, though it must be duly acknowledged that our present methods of treatment owe whatever results they do achieve to the painstaking investigations of laboratory workers into its complex etiology and pathology.

STRUCTURE AND FUNCTION OF THE CERVIX [1]

Since the pathology of diseases of the cervix is based so largely on the histologic peculiarities of that organ, it might be well at the outset to review briefly its structure and function, particularly in relation to those of the uterine body. Embryologically, the cervix is developed from the second portion of Müller's duct, while the uterine corpus is developed from the first part, union being effected at the internal os. The cervical mucous membrane is composed of complicated racemose glands which empty through small ducts into the cervical canal; their lining epithelium is of the high, cylindric, goblet cell type, and their secretion is true mucus. In addition, the cervical mucosa is thrown into definite folds radiating from a central line, the whole constituting the so-called arbor vitae. Toward the external os, the ciliated epithelium undergoes transition into the laminated type which covers the intravaginal portion of the cervix; toward the internal os, the glands become less arborescent and the whole cylindric epithelium is lower, so that a transition is gradually effected into the corporeal endometrium, which consists of simple glands lined with cuboidal epithelium, lacking the corrugations characteristic of the endocervix, and secreting a serous instead of a true mucous discharge.

Equally important is the lymphatic structure of the cervix and the uterine body. The lymph current may be traced from its origin in the cervical and corporeal mucosa through minute, funnel-shaped ostia, directly to the myometrium, where it branches into an extensive capillary net which penetrates every bundle and fascicle of the entire uterine musculature, later draining into the main collecting channels which course parallel to the uterine and ovarian blood vessels at the base and top of the broad ligament.

Functionally, the cervix acts merely as a passive communicating channel to the vaginal outlet, while the latter is actively engaged in the functions of menstruation and parturition, and undergoes, as Moench [2] vividly puts it, a monthly physiologic catharsis during each menstrual period.

Careful laboratory studies, culminating in the work of Curtis, have proved quite definitely that the internal os acts as a barrier against practically all invading organisms except the gonococcus, so that while infection of the endocervix is frequent, infection of the corporeal endometrium is rare and is practically never of intrinsic origin. The comparative histology and function of the two structures make these facts obvious, and it need scarcely be emphasized that the complicated structure of the cervix, particularly in the light of its frequent exposure to trauma and external infection, is an ideal medium for the growth of bacteria, or that its lymphatic system furnishes an ideal route for the upward extension of local infection.

ETIOLOGY AND BACTERIOLOGY

The causation of chronic endocervicitis is still far from clear. A large percentage of the cases are undoubtedly due to specific infection, some from direct contact and some from a childhood infection which was possibly so mild that it passed unnoticed then but which, after lying dormant for years, was fanned into activity at a later date or which paved the way for another type of infection, as is frequently the habit of the gonococcus.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Graves: Gynecology, ed. 2, 1918. Sturmdorf, Arnold: Gynoplastic Technology, Philadelphia, F. A. Davis Company, 1919.

2. Moench, Laura: The Relationship of Chronic Endocervicitis to Focal Infection with Special Reference to Chronic Arthritis, J. Lab. & Clin. Med. **9**: 289 (Feb.) 1924.

Kidd [3] in particular believes that if exposure to infection takes place within the eight or ten days preceding a period, extension upward is the rule during the next menstruation, especially if the patient is at all active. The normal external os has to some extent the faculty of the internal os of prohibiting the entrance of pathogenic bacteria; but when injuries occur, such as lacerations from childbirth or, less frequently, from careless instrumentation, this is no longer the case, and the gaping, open os and exposed mucosa due to the resulting eversion offer an easy avenue of access for whatever bacteria may be present. The so-called congenital erosion was once invoked to explain a small percentage of cases, but some authorities insist, and I am inclined to believe correctly, that this condition is rather the result of a former infection than a simple physiologic outgrowth. Whether the colon bacillus figures through a blood stream infection or by an ascending route we do not as yet know, but it is a significant fact that a large number of these patients give a history of extreme and prolonged constipation. Predisposing causes are to be found in any general condition, such as anemia or tuberculosis, which, by lowering the patient's resistance, makes her an easy prey to bacteria which under normal conditions would hardly be pathogenic. In the virgin with intact hymen, where specific infection can be definitely ruled out, we can frequently arrive at no explanation, and it is fortunate that the pathologic change is sufficiently definite to warrant our basing our treatment on it alone.

Practically all types of bacteria may be identified in chronic endocervicitis, but certain types are predominant. Of these, the gonococcus is the most common, although frequently it cannot be identified in spite of repeated tests and proved exposure, because of its tendency to burrow deep into the cervical tissues and remain dormant for years, or because it may itself have died out and have been replaced by a later infection of a different type. The streptococcus, the staphylococcus and the colon bacillus are generally agreed to be next in order of frequency, and mixed infections are not uncommon. Curtis [4] believes that the virulent bacteria found in a certain percentage of patients with a persistent mucopurulent discharge make spontaneous postpartal and postoperative infections eventualities to be dreaded in such cases.

PATHOLOGY [5]

The gross picture of endocervicitis may differ in intensity but is for the most part typical. The cervical mucosa appears red, swollen and more or less everted, and there are circumscribed areas of glandular proliferation about the external os. The columnar epithelium of the canal may have pushed itself out on the vaginal aspect of the cervix and it may have overgrown or completely replaced the stratified epithelium normally present, producing the so-called erosion, which, as has been repeatedly pointed out, is in no sense an ulceration but merely new cell formation resulting from the proliferation of the lymphoid tissue within the canal. Hypersecretion of the cervical glands, which results both from the prolonged vaginal contact and from the distorted structure, results in turn in hyperplasia of the cervical connective tissue. The occluded glands, which may be actually plugged by tenacious mucus as well as by the overgrowth of squamous epithelium, or by hyperplasia of the periglandular tissue, and the cyst formation, which is not infrequent, add to the hypertrophy, so that the cervix may be several times its normal size. The microscopic picture, which concerns us as clinicians only incidentally, will vary from mild inflammatory changes in the stroma and excess of glandular tissue to marked cystic changes and even to multiple abscess formation.

Pelvic manifestations are more usual in the ovaries than in the tubes, and parametritis is frequent, particularly in association with posterior cellulitis. Indeed, it is difficult to estimate what percentage of these lesions, especially the degenerative changes of the ovary characterized by an insidious development, could be traced to an ascending lymphangitis; but, in view of the complicated lymph system that we have already described, it is obvious that a fair number of such infections are of primary cervical origin.

SYMPTOMATOLOGY

The symptomatology of the disease is varied and is often complicated by the fact that, when the patient reaches us, we are dealing not only with endocervicitis but also with associated or resulting pathologic change that may entirely overshadow the original lesion. The most constant symptom is a leukorrheal discharge, usually odorless, varying in quantity and varying also from a thin, mucoid secretion to a highly colored, purulent one, as is nearly always the case in gonorrhea, but always characterized by its tenacity. Menstrual derangements are not uncommon, being the result of a secondary hyperplasia, a circulatory stasis, or a secondary ovarian involvement. Backache and dyspareunia are not ordinarily present unless there are associated displacements or parametrial involvement, particularly posterior cellulitis, with extension to the uterosacral ligaments. Sterility is a frequent complication, owing to the plugging of the cervical canal by tenacious mucus or the thickened cervical mucosa, or the destruction of the spermatozoa by purulent secretions. Constipation is frequent, and systemic manifestations will vary according to the severity of the disease.

DIAGNOSIS

Since the leukorrheal discharge and the gross cervical picture are in most instances pathognomonic, diagnosis does not ordinarily present many difficulties. Tuberculosis and syphilis of the cervix, both comparatively rare conditions, may be differentiated by the history and the general physical and laboratory examinations, as well as by the fact that normally in both the tendency is toward destruction of tissue rather than proliferation. Smears should always be made and cultures if necessary, in an endeavor to identify the infecting bacteria, and in suspected malignant diseases laboratory studies are essential for a differential diagnosis, which is imperative in view of the radically different treatment necessary in each instance. It goes without saying that infections of the lower genital tract and of the upper pelvis should be carefully differentiated also.

CERVIX AS SOURCE OF SYSTEMIC INFECTION

In view of the pathogenic bacteria present in endocervicitis and of the extensive lymphatic system of the cervix and its adjacent structures, many investigations have been undertaken with the idea of identifying it as a focus of systemic infection. Sturmdorf,[6] in fact, speaks of it as "the tonsil of the pelvis." Rosenow [7]

3. Kidd and Simpson: Infections of the Female Urethra and Cervix, New York, Oxford University Press, 1924.
4. Curtis A. H.: The Pathology and Treatment of Chronic Leukorrhea, Surg. Gynec. Obst. 37: 657 (Nov.) 1923.
5. Matthews, H. B.: A Study of Chronic Endocervicitis, Surg. Gynec. Obst. 32: 249 (March) 1921.
6. Sturmdorf (footnote 1, second reference).
7. Rosenow, E. C.: Results of Experimental Studies on Focal Infection and Elective Localization, M. Clin. N. Amer. 5: 573 (Sept.) 1921.

draws attention to it as a possible infective agent, and Moench [2] has done the most notable work in this field by reproducing experimentally in animals arthritic conditions by inoculations with serums from the cervical discharges and tissues of patients suffering both with endocervicitis and with arthritis. She reports a small series of cases in which the radical treatment of infected cervices cleared up chronic arthritic conditions, and isolated instances are also reported elsewhere in the literature. Langstroth [8] has reported a series of fifty patients, with nervous and mental conditions, in whom other foci of infection had been definitely eliminated, who were either relieved or cured by the eradication of a diseased cervix. These investigations, as well as the actual histology and lymphatic structure of the cervix, would seem to warrant its consideration as a frequent focus of infection in systemic diseases, and one that should be carefully investigated in obscure conditions particularly. The question, however, is still an open one, and to my mind we should be guarded in promising our patients too notable an improvement in general health after the relief of cervical pathologic injury.

TREATMENT

The treatment of endocervicitis is not within the scope of this paper, but I should like to say in conclusion that, unless the facts which I have presented are borne continually in mind, we cannot hope for good results. The structural peculiarities of the cervix, its frequent exposure to trauma and infection, and its faculty of harboring bacteria over long periods of time, all emphasize the fact that local, superficial treatment is worse than useless, and that any methods which are to succeed must be directed toward the underlying pathologic change of the deeper cervical structures.

512 Hibernia Building.

8. Langstroth, F. W., Jr.: Focal Infection of the Cervix and Its Relation to Systemic and Mental Diseases, M. Rec. **99**: 857 (May 21) 1921.

RADIUM IN THE TREATMENT OF CANCER OF THE CERVIX UTERI *

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The purpose of this paper is threefold: First, to describe the technic of radium treatment of carcinoma of the cervix uteri as used in the Howard A. Kelly Hospital; second, to compare our later statistics with those of former years to determine the value of the advancements made in technic since the first case of cervical cancer treated in our clinic, in 1908,[1] and, third, to review briefly some statistics of other clinics.

TECHNIC

Any form of medical or surgical technic should be as simple as efficiency and accuracy will permit, and, as far as possible, comfortable for the patient. Three forms of radium application are employed in the treatment of cancer of the cervix: (1) direct application of screened radon to the accessible growth; (2) implantation of radon seeds into the local growth or lateral extension, and (3) heavy cross-firing through the pelvis from several portals over the skin. I shall discuss these forms of technic in this order after describing the apparatus.

Apparatus Used in Applying Radium to and in the Cervix.—This consists of:

1. Radium tubes of brass, 1 cm. in length and 0.5 cm. in diameter, with 1 mm. wall. These contain a small glass tube of radon.
2. Rubber cots to hold one, two or three brass tubes.
3. Gauze plaque to hold from three to eight brass tubes.
4. Lead screens—small pieces of lead, 3.5 by 2 cm., and from 2.5 to 5 mm. in thickness and wrapped in gauze to absorb the secondary beta radiation.
5. Gauze packs.

Apparatus for Implantation of Radon Seeds.—This consists of:

1. Glass capillary seeds, from 3 to 4 mm. in length.
2. Hollow needles with obturator of varying length to reach the cervix or parametrium.

Apparatus for Cross-Firing Irradiation of Pelvis.—This is made up of:

1. A so-called plain package made of felt about 2 by 3 inches, and of the thickness of the desired filtration distance. On the top of this a wooden box with hinged cover is strapped, into which the box of radon tubes is dropped, after the package has been "set up."
2. A heavy 2 inch lead cylinder for cross-firing through several skin portals. This cylinder has a bore of 2 inches and a wall of 1 inch lead which prevents cross-firing the skin and limits general body irradiation. It is suspended by a suitable mechanical device which allows of all possible adjustments and directions.[2] A 2 mm. aluminum plate and rubber sheeting are used to filter out the secondary beta radiation from the lead.
3. An emanation carrier provided with a heavy lead cover for protection of the operator's hands, and an adjustable handle to fix the carrier at any desired distance from the end of the cylinder.

Direct application to the cervix is best performed without general anesthesia and with the patient in the knee-chest posture. When the growth is chiefly intracervical, the small rubber cot containing two or three tubes of radon is inserted into the canal. A gauze plaque containing radon tubes the size of the cervix is then placed over it and the vagina packed full of lead filters and gauze. Fungating and ulcerative growths are treated with the plaques alone. The dosage varies, depending on the extent of the disease, from 2,500 to 3,500 millicurie hours. Rarely do we give the maximum amount at one application, as a marked reaction results.

In massive growths filling the vagina, radon seeds are implanted. This is best done with the patient in the knee-chest posture, prior to the topical application of the plaque or insertion of the rubber cot, and adds little pain or discomfort. The total amount implanted varies from 10 to 25 millicuries well distributed.

If parametric involvement complicates the local condition or is recurrent after operation or irradiation, it is treated by implantation. In these cases it is usually advisable to give a general anesthetic. From one to three seeds, of from 3 to 6 millicuries strength, are inserted into either parametrium as the occasion demands. These implantations are followed in a few days or after from three to six weeks by cross-firing of the pelvis. This cross-firing treatment is also given when large pelvic masses are present, but uncommonly when the disease is limited to the cervix. We feel that it does not improve the percentage of cures in early cases. The heavy lead cylinder is essential to accurate and concentrated cross-firing without overlapping on the

* From the Howard A. Kelly Hospital, Inc.
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1. Kelly, H. A.: Tr. Am. Gynec. Soc., 1916.

2. Burnam, C. F., and Ward, G. E.: Am. J. Roentgenol. **10**: 625-632 (Aug.) 1923.

skin. With it several portals, for example, two anterior and two dorsal, are given erythema doses, the rays being directed toward the intrapelvic disease; this is especially helpful for palliation of pain and prolongation of life.

COMPARATIVE STUDIES

The acknowledged poor results obtained by surgery in cancer of any sort are well known to the profession. The surgeon's only answer to this serious failure is to have the patients come early. In cancer of the cervix, however, only about half the patients heed this warning. Of the patients entering the Johns Hopkins Hospital prior to 1913, only 57 per cent of the cases were operable; in 11 per cent of these the patients died after operation or from complication thereof—primary mortality. Only 25 per cent are permanently cured, or about 8 per cent of the total number. Seven years later, Martzloff [3] found a lower percentage of operability—46.5 per cent. The total operative mortality in his series of 387 patients operated on prior to 1920 was 14.2 per cent. The incidence of patients operated on and traced who were living and well at the time of the publication was 18.7 per cent, and the so-called five-year cures, 26.6 per cent.

TABLE 1.—*Data of Patients Clinically Cured*

No. Treated	5 Years	2 Years	1 Year	6 Months
14	4	1	6	3

Clark and Block [4] reported that, in 33 per cent of the operable cases past the five year period, the patients were well. In twenty-two of their operable cases in which radium was used, 27.2 per cent of the patients passed the quinquennial test; 6.7 per cent of those with inoperable cancers remained well for five years. In the total of 144 cases of which 15 per cent were operable, 10.4 per cent of the patients remained well five years. When one adds 5 and 10 per cent surgical mortality to the 27.2 per cent cures, it is clearly seen how well radium therapy compares with operation. Adding the large number of the hopeless inoperable group who are greatly improved by radium together with a 6.7 per cent cure in this distressing class, one readily sees the great value of this physical adjunct to the surgeon's armamentarium.

Greenough [5] reported a study of 829 cases of cancer of the cervix. Of these, ninety-four patients were free from disease three or more years after treatment, more than half of which "cures" were obtained by the use of radium and the roentgen ray without radical operation. In 243 cases included in the early favorable or borderline groups, hysterectomy alone cured one in three, with an operative mortality of one in five. He concludes that in early and favorable cases of cancer of the cervix the choice between operation and radium is an open one.

PREVIOUS STUDIES IN THE HOWARD A. KELLY HOSPITAL

In 1915, Kelly and Burnam [6] reported a series of 213 cases of cervical cancer. Of the fourteen operable cases, in ten the treatment was by operation, and in four with radium alone. All of these patients were living and well at the time of publication, from six months to three years after the beginning of treatment.

In the 199 inoperable and inoperable recurrent cases, fifty-three patients (27 per cent) were clinically cured; 109 (54 per cent) markedly improved and thirty-seven (20 per cent) not improved; in the thirty-five cases originally inoperable, the patients remained well as shown in table 2.

TABLE 2.—*Data of Inoperable Cases*

No. Well	4 Years	3 Years	2 Years	1 Year	6 Months
35	2	2	4	17	10

In eighteen originally inoperable recurrent cases, the results are shown in table 3.

TABLE 3.—*Data of Originally Inoperable Recurrent Cases*

No. Well	6 Years	4 Years	2 Years	1 Year	6 Months
18	1	1	1	10	5

These authors employed the term clinically cured and reserved the term cured for later studies.

In November, 1922, after a lapse of seven years, Burnam [7] made another study of the same cases. At this time it was learned that a 50 per cent cure had been effected in the operable class, the cure of the oldest patient extending over a period of eleven years. Of the inoperable cases, in which 27 per cent of the patients were clinically cured, of these only fifteen, or 6 per cent, remained in the cured class, as forty-two had been treated only in the last eighteen months.

A year later Burnam and Primrose made a study, which has not been published, of all patients with cancer of the cervix (429) treated up to Jan. 1, 1918. This gave the shortest period after treatment of four and one half years. Their results are given in table 4.

TABLE 4.—*Data of Burnam and Primrose's Patients with Cervical Cancer*

	Operable Cases								
	No.	Well	Died of Other Causes	Died of Recurrence	Under Radiated	Over Radiated	Lost	Failure	Per Cent
Cured....	18	10	7	1 (5 yrs.)	..	..	..	..	72
Not cured	7	..	1	..	1	1	1	3	28
Total..	25								

	Postoperative (Prophylactic Radiation)						
	No.	Living and Well	Recurrent, 5 Years	Died Within 5 Years	Died of Recurrence	Lost	Per Cent
Cures....	8	7	1	..	..	..	57
Failures..	6	..	..	3	3	1	43
Total..	14						

	Total Number Treated and Number and Percentages of Cures Effected to 1918 After 4½ Years Had Elapsed)			
	No. of Cases	No. of Cures	Per Cent Cured	Total per Cent Cured
Operable	25	18	72	..
Prophylactic radiation	14	8	57	..
Inoperable	224	19	8.8	..
Recurrent inoperable	166	21	13	..
Total number	429	66	..	15.3

Fricke [8] recently reviewed all the cervical cancers treated with radium and roentgen ray. We have been using the roentgen ray for the last three or four years

3. Martzloff, K. H.: Bull. Johns Hopkins Hosp. **34**: 141 (May), 184 (June) 1923.
4. Clark, J. G., and Block, F. B.: Atlantic M. J. **27**: 696 (Aug.) 1924.
5. Greenough, R. B.: Surg. Gynec. Obst. **39**: 18 (July) 1924.
6. Kelly, H. F., and Burnam, C. F.: Radium in the Treatment of Carcinoma of Cervix, Uteri and Vagina, J. A. M. A. **65**: 1874-1878 (Nov. 27) 1915.
7. Burnam, C. F.: Results of Treatment of Carcinoma of the Cervix, with Statistics and Technic, Am. J. Roentgenol. **9**: 765-771 (Nov.) 1922.
8. Fricke, R. E.: Arch. Phys. Therap., X-Ray, Rad. **7**: 189 (April) 1926.

to replace outside radiation in selected cases, so that the series, although interesting, is too recent to permit of definite conclusions.

Apparently, from table 5, one would think that the clinical cures are rather low, namely, 20 per cent. When looking over the summary of the cases, one finds it significant that only five of the fifty-five cases (10 per cent) were really operable, in one of which operation was done. Four were borderline and thirty-five, or

TABLE 5.—*Recent Cases of Cervical Cancer at the Howard A. Kelly Hospital*

Radium and Roentgen-Ray		
Primary cases		44
Recurrent cases		10
Operations and roentgen ray		1
Total		55
	Number	**Percentages**
Not helped	12	22
Slight palliation	14	25
Marked improvement	17	31
Not followed	1	2
Clinical cures	11 (4 yr.+)	20

63 per cent, were advanced and inoperable. Even with this exceedingly difficult group, 20 per cent of the patients were clinically cured, one remaining well more than four years.

PRESENT SERIES

The present series consists of 232 cases of carcinoma of the cervix uteri treated during 1921 and 1922. These years were chosen arbitrarily as examples of treatment with the more recent, perfected technic.

For the sake of clearness the cases are grouped, as shown in table 6.

TABLE 6.—*Summary of Two Hundred and Eighty-Four Cases (Treated, 231) Occurring During 1921–1922*

Operable	14
Operation after radium	8
Recurrent	41
Prophylactic after operation	2
Borderline	19
Cautery and radium	7
Inoperable	126
Inoperable and well	15
Total treated	232
Deduct because of insufficient data	52
	284

	Cases Treated with Radium			Primary Growth	
	No. of Cases	Clinically Cured	Per Cent Cured	Improved, per Cent	Healed, per Cent
Operable	14	8	57+	29	14
Operation after radium*	8	4	50	25 (2)	..
Recurrent	41	10	24.4	40	20
Prophylactic	2	2†	100	..	..
Borderline	19	4	21+	21	53
Radium and cautery	7	3	43	14+	28+
Inoperable	141	15	10	44.4	28.3

* Died from other causes: 1 lost; 1 postoperative hemorrhage.
† One in 18 months; one in 1 year 3 months.

Analyzing the operable group in which radium alone was used, we find that eight out of fourteen patients were well when last seen from eight months to five years after the onset of treatment; three year cures, one; four year cures, four; five year cures, one (three year period of cure, 45 per cent). The remaining six died from five months to two years and ten months after the first treatment. In all, there was improvement or healing of the primary growth, death resulting from direct extension or metastasis. We have then a clinical cure of 57 + per cent, with no primary mortality. This is far above any operative procedure, even that obtained by Wertheim, who had a 50 per cent cure in the early operative cases.

Operation and Irradiation Group.—There were eight patients on whom radical operation was performed after irradiation. One is lost; one died of operative hemorrhage; one died in twenty-one months of recurrence, and one died of metastasis to the lungs more than four years after operation. Of the four (50 per cent) who were clinically cured, all were well when last seen from one year and four months to five years after the first treatment.

Recurrence After Operation.—Forty-one patients came to the hospital with recurrence coming on from a few weeks to three years after panhysterectomy. Ten (25.4) were free of disease when last seen from two months to five years after treatment. In eight others, the local condition was healed; six more showed marked improvement; in ten, there was some improvement; in six, doubtful improvement, and in one there was no improvement. In this case improvement was not expected. The thirty-one who were not clinically cured lived from three months to two and one half years.

Prophylactic Irradiation After Operation.—Two patients were so treated and both were well when last seen, four years and one year and three months after the first treatment.

Borderline Group.—These nineteen cases showed some degree of vaginal extension, or a little infiltration on one or both parametria. They were, however, practically inoperable, and all the patients were treated with radium alone. Four (21 + per cent) were clinically well when last seen—one died of myocarditis after three years, and three and four years after treatment was begun. In ten, the primary growth was healed, one recurring after four years, and one after two and one half years. Of the remaining, all showed varying degrees of improvement except one in which there was no note as to progress, and the patient died in six months.

Radium-Cautery Group.—In seven cases, treatment was with radium application after destruction of the local growth with the actual cautery. Many of these were inoperable, and the cautery was used to check the bleeding or remove the massive growth filling the vagina. Three patients (43 per cent) were clinically well when last seen—four months, one and one half years and four and one half years, respectively; two showed marked improvement. It seems advisable to destroy with the cautery the fungating, massive cervices, so that the radium can be placed nearer the outer active limits of the disease.

Inoperable Group.—These cases present many data which, if time and space permitted, would be interesting to relate in detail. We have seen four in which there were marked changes in extensively diseased parametria following irradiation. In two the parametria entirely cleared. By reference to table 7 it will be noted that 43 per cent of the inoperable cases showed improvement of small or marked degree, and in 28.3 per cent the local conditions were healed. The 10 per cent of the patients who were well when last seen will be discussed separately. In seven, no notes were made, and in the remaining seventeen (12 per cent) there was no improvement. In table 7, it will be noted that all the growths were extensive or that the patients had or soon developed some serious complication.

Table 8 gives the duration of life, after beginning treatment, in 126 inoperable cases in which cure was

not effected. Twelve patients remained well for two years; seven for three years, two of which are still living, and two for four years.

In fifteen of the 141 inoperable cases, or 10 per cent, the patients have remained well as shown in table 9.

These patients were all well on last examination by some one at our hospital, by the home physician, or by personal statement.

TABLE 7.—*Seventeen Inoperable Cases with No Benefit from Treatment*

1.	Died of uremia in few weeks
2.	Died, six months; no note as to why not helped; tuberculous rectal stricture on admission
3.	Marked anemia; rapid extension to bladder
4.	Only 2¼ Gm. hours treatment given; growing worse; six months
5.	Emaciation; died, six months
6.	Too extensive; died, one month
7.	Died, four months; no reason given for failure to improve
8.	Vesicovaginal fistula; two months; no reason given for failure to improve; rectal-radium reaction
9.	Vesical and rectal fistula two weeks prior to death; five months; no reason given for failure to improve
10.	Hopeless on admission; died, three months
11.	Bladder irritation after irradiation; vesicovaginal fistula in two months; died, four months; no reason given for failure to improve
12.	Died in ten days; streptococcal peritonitis
13.	Cachexia on admission; died, few months
14.	Radium before admission; no reason given for failure to improve
15.	Extensive; died, four days; cachexia
16.	Fixation, left; involvement of postvaginal wall; died, six months; no reason given for failure to improve
17.	Fixation, left; nodule vaginal vault; died, two months; no reason given for failure to improve

CONCLUSIONS

1. Improved methods in technic have increased the percentage of cures in all groups, with the exception of the borderline. These were regarded as inoperable.

2. Classifying the operable cases in which treatment with radium alone and with radium plus operation, and those in which treatment was prophylactic after operation, as all operable, we have a total of twenty-four patients of which fourteen were well when last seen. This gives a total clinical cure in the operable class in which operation and radium were used of 58 per cent. This is against 57 per cent in those in which radium alone was used. As stated above, many of the cases in this series are below the five year period, but I feel that they bear out these conclusions when compared with our former statistics. In a further communication, it is hoped that all patients treated in the Howard A. Kelly Hospital prior to five years ago will be reviewed and the absolute five year cure noted.

TABLE 8.—*Duration of Life After Beginning of Treatment*

Died before 6 months	17
Lived 6 months	30
Lived 1 year	20
Lived 18 months	9
Lived 2 years	12
Lived 3 years	6
Still living, 3 years and 6 months	1
Still living, 3 years and 1 month	1
Lived 4 years	2
End result unknown	11
	109
Not improved	17
	126

TABLE 9.—*Patients Well in Inoperable Cases*

No. of Cases	1 Year	18 Months	2 Years	3 Years	4 Years	5 Years
15	1	2	1	3	6	2

3. That radium is of great value in that class of cases which are hopeless from the standpoint of operation is undisputed. Before the introduction of radium, we either turned these poor sufferers down flatly or sent them away with some minor palliative measure but no definite help. We have seen in this last series of 141 inoperable cases 44.4 per cent improvement; 28.3 per cent healing of the primary growth, and 10 per cent clinically cured.

4. A clinical cure has been realized in forty-seven (20.2 per cent) of the 232 cases treated, including all classes of cases—operable, operation after radium, recurrent after operation, prophylactic after operation, borderline, radium and cautery and inoperable. Of the patients treated by radium alone, i. e., the operable (not operated on), borderline and inoperable, twenty-eight out of 174, or 16 per cent, are clinically cured.

FIVE YEAR END RESULTS IN THE TREATMENT OF CANCER OF THE UTERINE CERVIX

REPORT OF ONE HUNDRED AND SEVEN CASES*

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SAN FRANCISCO

This study is limited to cancer of the cervix, since we agree with those who hold that the problems of cancer of the uterine body differ radically from those of the uterine cervix. Cancer statistics demonstrate that methods of treatment that will effect cure in cancers of the fundus rarely accomplish good results in those of the uterine cervix. The cancers of the cervix differ so much among themselves in habits of growth and malignancy that a study of the results is sufficiently confusing even if an investigation is restricted to this small anatomic field.

In the ten years from July, 1915, to July, 1925, we have treated nearly 250 cancers of the cervix. One hundred and ninety-two of these were treated with radium alone, or by operation, usually with preliminary or postoperative irradiation. The roentgen ray has been used as an adjunct in some of the cases since 1923. One hundred and fifty of the 192 have passed a three year period of observation but will not be considered as a group at this time, since we believe that we can advance our knowledge of cervical cancers only by a study of those which have been controlled long enough to establish their chance of cure. Our five year series consists of 107 patients, treated between March, 1916, and March, 1921, with radium or surgery. Apology for presenting such a small series would be necessary if it were not for the difficulty of following even such a small group for a period of five or more years in an American city, losing from the follow-up only three cases, all lost after three years. A study of the histology will form a separate paper.

DEFINITION OF CURE

Some authors urge the adoption of three years' freedom from recurrence as a proper definition of a permanent cure. They state that, while cancer may recur even as late as eight or nine years after treatment, the incidence of recurrence is slight after three years, and is more or less evenly distributed in the fourth, fifth

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and sixth year, and that the difficulty of following patients for five years more than outweighs the impairment of statistics by the chance of recurrence after three years. In this I do not agree.

The advocates of the three year permanent cure argue that early cancers rarely present recurrences three years after radical operations, and that in the borderline cases, the patients that cannot be cured usually die from recurrences within three years of the operation. This held true as a rule, but there are too many exceptions to make it of much value. Every surgeon knows of borderline cases in which recurrences develop after many years. Moreover, the literature is very confusing, since the results of treatment are usually stated in the older literature for one group combining both the operable and borderline cases. The modern literature promises little more. While it groups separately operable, borderline and inoperable cases, the value is spoiled, since the cases are usually reported under one group, usually as "one to four year cures."

Even if the three year permanent cure held as a rule when surgery alone offered hope of cure, it does not follow that it will hold true for patients treated with radium. While we shall probably not know of the true value of radium treatment until five or six years have elapsed, there are many interesting observations. Bumm,[1] in 1919, reported that the proportion of cures by radium in his operable and borderline cases was one third less than that obtained by operation when the cases were followed for six years, although the results obtained by radium far surpassed those of operation when the cases were followed for only three years. Our results corroborate his statement. For these reasons, we believe that Winter [2] was correct in urging, in 1907, that only a five year freedom from recurrence after treatment should be regarded as a permanent cure. While cancer may recur even later than five years after treatment, it is very unlikely. In Winter's series of 350 patients, there were only two that positively and two that possibly developed recurrences five years after operation. Seitz [3] found 3 per cent of the recurrences in von Winckel's clinic in the fifth year. Peterson,[4] in 1920, tabulated his fourteen recurrences after operation. Two occurred in the fourth year and one in the sixth. Bonney,[5] in 1921, studied thirty-three recurrences, two of which occurred after five years. Weibel,[6] in 1914, found 7.7 per cent of recurrences in Wertheim's 169 cases that had been followed from six to eight years after operation. Of these thirteen recurrences, six developed in the sixth year, five in the seventh and two between the seventh and eighth years. In 1925, Weibel,[7] in a study of the 1,000 cases that had passed the five year period of observation in the Wertheim and Weibel clinics, found that 5 per cent of the recurrences occurred in the fifth year. Werder,[8] in 1913, showed that there were recurrences five or more years following hysterectomy by the cautery method. The removal, naturally, was not as wide as the modern radical operation. He had eight recurrences developing from five to nine years in the eighty-seven patients surviving operation. These observations were made almost without exception before the wide adoption of radium as a therapeutic agent and at a time when surgery was the only hope for cancer patients. The great problem at that time was the development of surgical methods sufficiently extensive to permit the successful treatment of the borderline group, an effort that we now know has failed. At any rate, nearly all these operative series contained a large number of borderline cases.

1. Bumm, E.: Sechs Jahre Radium, Zentralbl. f. Gynäk. **43**: 1-7 (Jan. 4) 1919.
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4. Peterson, R.: Radical Abdominal Operation for Cancer of the Cervix, New York State J. Med. **20**: 313 (Oct.) 1920.
5. Bonney, Victor: The Radical Abdominal Operation for Carcinoma of the Cervix, Brit. M. J. **2**: 1103-1106 (Dec. 31) 1921.
6. Weibel, William: Operative Technic and Results in Carcinoma of the Uterus, Surg. Gynec. Obst. **18**: 502, 1914.
7. Weibel, William: Results in Cancer of the Cervix, Wien. klin. Wchnschr. **38**: 656-660 (June 4) 1925; abstr. J. A. M. A. **85**: 453 (Aug. 8) 1925.
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TREATMENT

Our conception of proper treatment has changed tremendously since radium has come into the field. All now agree that surgery should be restricted rather than developed, since it is amply proved that the results of radium and the roentgen ray in the treatment of borderline cancers far surpass those of surgery. There is also some hope of cure by radium for the inoperable cases, a group which in the past were abandoned to die.

Prior to 1910, surgical results were stated in two ways: (1) the proportion of patients operated on who remained cured for five years and (2) the same, as expressed in terms of all those with cervical cancers who had applied for treatment during the same time. This second point was advanced to evaluate better the results of the various operations. It was necessary, since it is apparent that the man operating only in early cases would have a larger proportion of surgical cures than he who attempted to treat the more hopeless material as well. Many radium students have failed to keep these points in mind when contrasting the value of surgery and radium as therapeutic agents.

TABLE 1.—*Inoperable and Borderline Cases in Which Treatment Was by Radium Only*

Number of cases	59	
Lost	1	
Dead	53	
Dead of cancer	51	
Dead of intercurrent disease	2	
Dead within three years	47	
Dead from three to five years	6	
Alive; well; five years	5	(9%)

Radium.—At first, radium was utilized chiefly to improve the condition in the inoperable cases. It has accomplished wonders in this field. Not only has it given marked palliation to countless women, but also it has undoubtedly cured a considerable number. A tremendous radium literature has demonstrated that cures of borderline and inoperable cases may be expected in from 6 to 25 per cent, depending on the proportion of borderline and inoperable cases. It is certain that even in seemingly hopeless cases radium has given from 3 to 10 per cent of cures in the hitherto perfectly hopeless inoperable cases.

In table 1 are given the results in a series of fifty-nine inoperable and borderline cases in which no operation had been performed for cancer. Only one inoperable case was lost to view. The patient, aged 63, was last examined three and a half years after the radium treatment, when there was no evidence of recurrence. There is no record of her death in the Bureau of Vital Statistics in any of the coast states. Two patients died before the completion of the five year period; one, aged 44 whose cancer was inoperable, had been well for two and a half years when killed in an automobile accident; the other, aged 79, with an early borderline adeno-

carcinoma, died from pneumonia three years after treatment at a time when the pelvic condition indicated a potential cure. Five patients of the fifty-six remain well from five to seven and a half years (9 per cent five year cures).

Panhysterectomy.—Whatever the future will determine as to the relative values of truly radical surgery and of radium, there is no doubt whatever that the results of radium in operable cases far surpass those of ordinary panhysterectomy, the operation usually done in America for the treatment of cervical cancers.

TABLE 2.—*Radium for Prophylaxis or for Recurrence After Nonradical Operations Elsewhere*

	Hysterectomy	Cervical Resection
Number of cases	23	2
Dead of cancer	23	0
Dead within three years	21	0
Died after three or four years	2	0
Alive; well; five years	0	2

The time has now arrived when we believe that the case has been proved that the ordinary panhysterectomy has no place whatever in the treatment of cervical cancer. This view, which I long since developed from the literature, is confirmed in my mind by table 2. It consists of our observations on twenty-three patients on whom competent surgeons performed vaginal or abdominal hysterectomy at periods from two weeks to one year previous to our postoperative irradiation, either as prophylaxis or for what was regarded as early recurrence. Seven of the women had no demonstrable malignant disease at our first examination. All the twenty-three patients are dead of cancer. Only two lived as long as three and a half years. There were also two cervical resection cases, one for a polyp which was proved to be cancerous in the routine laboratory examination shortly after operation, and one in which the tissue was not examined microscopically until, seven weeks after operation, the cancer had extended so as to cause ulceration. Both these patients remain well, probably because the cancerous areas were lower down and thus more readily reached by the radium rays.

Radium in Operable Cases.—Surgery in the past has cured so few of the patients on whom it was attempted, while radium has given such wonderful results in the treatment in inoperable cases, that many have urged the abandonment of all surgical procedures and the substitution of radium for the treatment of all cervical cancers. This has been urged not only by radiologists whose training has been chiefly along radiologic lines, but also by some surgeons with much experience in truly radical operations. John Clark[9] has repeatedly called attention to the fact that many of the patients with so-called surgical five year cures, although free from cancer, were really hopeless invalids because of fistulas or other sequelae of operation.

Theoretically, radium should destroy any tumor that can be removed by surgery, yet it is a fact that there is no radium series of any size that has even approached 100 per cent of cures, even in the earliest cases. Since radium produces cures in from 5 to 15 per cent of apparently hopeless cases, we are forced to acknowledge that the action of radium on the tumor is not as simple as was formerly believed. Few at the present time believe that in inoperable cases the cure was solely by the action of radium on the cancer cells. There are always many cancer cells beyond the reach of the active rays. It seems logical to believe that a protective substance is developed in the body in reaction to the presence of the cancerous mass and that this aids, in a considerable measure, the local effect of the radium on the primary cancerous tumor; from which we may argue that nature has not yet developed a protective mechanism in the smaller early growths, although it has done much toward doing so in the more extensive tumors.

The literature of cervical cancer is fairly flooded with the results of radium therapy, yet for the most part the reports are along general lines. Errors in the bibliography are common and are quoted and requoted by various writers. When we actually study the list of operable cases in which only radium was used, we are astonished that the series is so small and that the percentage of cures is so low. Radiologists tell us that there are daily improvements in technic that will result in more frequent cures; yet if we are to debate whether radium should supplant surgery in operable cases at the present time, we must compare cases that have been followed for a minimum of five years after treatment. That is, we must confine our discussion to actual results up to the present time. We do not say that radium may not, at some future time, far surpass the results of surgery in operable cases. The future alone will answer this question.

We have investigated the literature and have studied the original articles, the data of which are presented in table 3. This is in effect that there are only 306 reported cases of operable cervical cancers up to the present time, with only 40 per cent of five year cures, and that there is no one series of any size with the exception of the much debated report of Döderlein. Yet even this author claims only 43.5 per cent of five year cures. While some, as ourselves, restrict the use of radium to the patients who could not withstand operation, others, as Heymann and Döderlein, use no surgery but irradiate all.

TABLE 3.—*Five Year Cures in Operable Cervical Cancers Treated by Radium Only*

	Number Cases	5 Year Cures	Per Cent
Bumm: Zentralbl. f. Gynäk. 43:1 (Jan. 4) 1919	34	8	24
Seitz: Klin. Wchnschr. 1:741 (April 8) 1922	8	4	50
Burnam: J. A. M. A. 65:1877 (Nov. 27) 1915; New York State J. Med. 20:318 (Jan.) 1920 (eight years)	4	2	50
Beuttner: Schweiz. med. Wchnschr. 53:105 (Feb. 1) 1923	9	4	44.4
Clark and Bloch: Am. J. Obst. & Gynec. 7:543 (May) 1924	22	5	27.2
Heymann: J. Obst. & Gynaec. Brit. Emp. 31:1, 1924	19	8	40.5
Bailey and Healy: J. A. M. A. 83:1055 (Oct. 4) 1924	25	9	36
Schmitz: J. A. M. A. 84:81 (Jan. 10) 1925	18	9	50
Ward and Farrar: J. A. M. A. 85:159 (July 18) 1925	18	9	50
Döderlein, Scholtin and Voltz: München. med. Wchnschr. 72:6 (Jan. 2) 1925	147	64	43.5
Lynch	4	1	25
Total cases	308	123	40

On the other hand, in table 4 we present 2,103 cervical carcinomas treated by radical operation with 42.1 per cent of five year cures. (In calculating the percentage of surgical cure, the patients dying from the operation have not been subtracted.) These 2,103 patients represented between 50 and 60 per cent of those applying to the various clinics for treatment. We have not included in the foregoing a number of smaller series: the thirteen patients of Ries,[10] in 1911, of which

9. Clark, J. G., and Bloch, F. B.: Relative Values of Irradiation and Radical Hysterectomy for Cancer of the Cervix, Am. J. Obst. & Gynec. 7: 543-549 (May) 1924.

10. Ries, Emil: The Diagnosis of Operability of Carcinoma of the Uterine Cervix, J. A. M. A. 56: 91-94 (Jan. 14) 1911.

seven were cured for periods of from seven to twelve years in spite of the fact that he operated on thirteen of sixteen women applying for treatment, nor the series of Sampson, in 1912, who cured for five years four of eight patients. I have purposely omitted some other American series because of the large percentage of cases that were lost from the follow-up. Not only are the results of surgery in this series of operable and borderline cases better than the results of radium alone in the operable cases in table 3 (42 versus 40 per cent), but the table shows how we can obtain better results by a proper combination of radium and surgery. All of the series in table 4 contained both operable and borderline cases. The operable cases furnished most of the cures and the lesser surgical mortality. The borderline cases furnished comparatively few permanent cures and most of the surgical mortality. If a truly radical operation had been performed only in the operable cases after preliminary radium and, in the borderline cases if irradiation and not surgical treatment had been done, the proportions of five year cures might well have exceeded 60 per cent. Yet at the time the series were developing, surgery offered the only chance of cure. To refuse to operate was to enforce a cancer death. In consequence, there was no chance of reducing the primary mortality, since experience has shown that this can be accomplished only by selection of cases.

Weibel shows five year cures by surgery in 87 per cent of the incipient cases, in 53 per cent of the mild cases, in 28 per cent of the more extensive cases and in only 14 per cent of the most extensive of his cases in which operation was done. The cure for the patients surviving operation is 98 per cent for the incipient, 61 per cent for the mild, 34 per cent for the more extensive and 19 per cent for the most extensive growths in his series of 1,000 cases. The early operable or incipient cases formed 6.5 per cent and the operable cases constituted 42 per cent of his entire group of 1,000 cases.

The operative mortality in table 4 is practically 17 per cent. It shows also that it was not large if the cases were well selected. It could have been greatly improved had the patients had preliminary blood transfusions. In spite of a mixture of operable and inoperable cases, Cobb's [11] mortality for thirty-five cases was only 14.4 per cent; Bumm's mortality was 13.4 per cent, and Weibel's total mortality was 16 per cent and was only 8 per cent in his second 500 cases; his mortality for all the incipient cases was 11 per cent and for all the mild cases 13 per cent. More recently, the surgical mortality of his incipient cases has fallen to 3 per cent. For ourselves, we have operated radically on thirty-six patients, with four deaths, or 11 per cent. Two of our deaths were in borderline cases, in which probably only irradiation should have been done. Our results have improved since we have given blood transfusions and have abandoned vaginal drainage. While the literature abundantly demonstrates that operative mortality decreases with the experience of the operation, the figures also show the possibilities of surgical cure. In our belief, the situation will not be improved by restricting the extent of surgical removals. The principle of surgical treatment for cancer remains here, as elsewhere, block excision in one piece.

11. Cobb, Farrar: Radical Abdominal Hysterectomy for Cancer of the Cervix Uteri, J. A. M. A. 74: 14-17 (Jan. 3) 1920.

OUR RESULTS BY OPERATION

We adjudged the tumor operable in twenty-two cases, or 27 per cent. Operation was refused by one patient and contraindicated in four. This group was treated by radium. We operated in eighteen cases, two early and twelve late operable and three early borderline cases and also in one which at first was inoperable until the mass had disappeared following radium treatment. We are not yet prepared to discuss the last case. Quite possibly the radium would have cured without operation. At any rate, the patient is well seven years after treatment. Radium was used preoperatively and postoperatively in eight cases. While the series is very small, it demonstrates points that are also shown in table 4; that is, if a patient survives operation, she is far more likely to remain well than to die subsequently from cancer. The results of the operable cancers operated on are expressed in table 5. All were squamous cell carcinoma. One patient died a year after operation from cerebral apoplexy. The pelvis was normal. Two cases were lost in the follow-up. These occurred in women of 34 and 48, respectively, who were well for more than three years after operation. We feel certain that one is still alive and refuses to report for examination. The death of the other has not been reported in the Bureau of Vital Statistics in any of the Pacific Coast states. There was one operative fistula. The patient died following a secondary closure and is recorded as

TABLE 4.—*Five Year Results After Radical Operations*

	Operations	Operation, per Cent	Death at Operation	Lost	Death, Intercurrent	Dead from Cancer	Cured	Per Cent 5 Year Cure
Bumm: Zentralbl. f. Gynäk. 43:1 (Jan. 4) 1919	157	..	21	...	...	..	77	49
Mayer: Zentralbl. f. Gynäk. 44:617 (June 12) 1920	342	54.5	68	...	...	..	107	39.3
Cobb: J. A. M. A. 74:14 (Jan. 3) 1920	35	..	5	...	...	10	20	57.1
Peterson: N. Y. State J. Med. 20:313 (Oct.) 1920	47	20	14	...	3	12	18	40.9
Bonney: Brit. M. J. 2:1103 (Dec. 31) 1921	100	62.5	20	4	3	33	40	43
Schweitzer: Zentralbl. f. Gynäk. 45:280 (March 5) 1921	177	63	12	...	2	73	90	50.8
Davis: Ann. Surg. 76:305 (Sept.) 1922	20	43.5	3	...	...	9	8	40
Gliesecke: Arch. f. Gynäk. 115:435 (Feb.) 1922	224	64	44	6	6	93	75	36
Weibel: Wein. klin. Wchnschr. 38:656 (June 4) 1925	1,000	51	160	...	...	..	..	42

2,102 cases with 42.1 per cent of five year cures and 347 operative deaths, or 16.7 per cent.

TABLE 5.—*Data of Radical Operations Alone, or With Preoperative or Postoperative Radium*

	Operable	Inoperable
Number of patients	17	1
Lost	2	..
Died of intercurrent disease	1	..
Died at operation	3	..
Died of cancer	3	..
Died within three years	3	..
Died three years plus	0	..
Alive and well, from five and one-half to ten years	8	1

Operative mortality, 16.6 per cent; cure in operative cases, 57 per cent; cure in all patients operated on, 60 per cent.

an operative death. All of the survivors are well and free from pelvic symptoms.

OPERABLE CASES IN WHICH RADIUM WAS USED

The operable cases in which we used radium are too few to permit of deduction save that we cured for five years only one patient; one died at one year of heart disease, and the other three died of cancer. Two had squamous cell epitheliomas. The other three proved their cancer by a cancer death. Operation was contraindicated by age and the general condition in one, obesity in one, heart disease in two, and was refused by one.

TABLE 6.—*Ages of Patients in One Hundred and Seven Cervical Cancers*

Age	Number
From 20 to 29	2
From 30 to 39	18
From 40 to 49	37
From 50 to 59	35
From 60 to 69	19
From 70 to 79	1

The age of the patients is shown in table 6. The two youngest, 27 and 29, presented inoperable growths when first seen and succumbed to cancer at six and sixteen months. Seventeen of the women, or 16 per cent, had never been pregnant. Several were virgins.

Table 7 shows the results of our treatment.

TECHNIC

In earlier cases of the series, radium treatment consisted of from 50 to 90 mg. of radium salts, usually arranged as a pack screened with glass, 0.5 mm. of silver, 1.2 mm. of brass and 1 mm. of lead. This pack was placed against the cancerous area and held in place with gauze and rubber packs. Later in the series, a tube of from 75 to 150 millicuries of radon was placed in the cervix usually under anesthesia. Crossfire was obtained by another tube firmly placed against the cervix with gauze and rubber packs or dental wax. The screening was essentially the same, save that the cervical applicator was also screened with 1 mm. of rubber.

TABLE 7.—*Percentage of Cures*

	No. Cases	3 Years	5 Years
Radium in operable cases	4	100%	25%
Radium in inoperable cases	56	20%	9%
Radium as prophylaxis or after suspected recurrence following hysterectomy	21	10%	0%
Radium as prophylaxis or after known recurrence following cervical resection	2	100%	100%
Radical operation, with and without preoperative or postoperative radium	15	60%	60%
Total	101	27%	16.8%

CONCLUSIONS

We present, as our belief, that:

1. No method has yet cured 50 per cent of cervical cancers.

2. The ordinary panhysterectomy has no place in the treatment of cervical cancers.

3. Better results will be obtained by irradiation in all cases that are not suitable for truly radical surgery.

4. The literature does not indicate that radium is likely to cure in more than a scant majority of the so-called operable cases.

5. There is a chance for improving the total number of cures by operating radically in early cases in which preoperative radium and possibly postoperative deep roentgen-ray therapy have been used, provided the surgeon can perform his operations with a limited mortality.

Parnassus and Third avenues.

[EDITORIAL NOTE.—This paper, together with the two papers by Drs. Miller and Ward, which precede it, and four papers by Dr. Culbertson, Dr. Matthews, Drs. Corbus and O'Conor, and Dr. Gellhorn, respectively, to appear next week, constitute a symposium on diseases of the cervix. The discussion will follow the papers to be published in our next issue.]

THE OUTPATIENT DEPARTMENT IN THE TEACHING OF PEDIATRICS*

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It is only in recent times that the outpatient department of our medical schools and hospitals for children has shown encouraging symptoms of assuming its proper position as a teaching force. Dispensary work has long been, and in many quarters still is, considered a sort of necessary drudgery or apprenticeship that the younger man must serve for many years, partly to supply material for the older men in the wards, and partly to prepare the younger man for the more important house service of later years. I myself have never shared that point of view. This may have been, at first, largely due to the peculiar and limited clinical situation of my earlier years; but even today, with a large hospital and a very large material, I find myself instinctively heading for the outpatient department when I begin my daily rounds. To give to an outpatient department a maximum of attractiveness and teaching value requires, however, a certain organization and cooperation, a certain method of conducting it, and, above all, a spirit of clinical enthusiasm that is readily contagious, under favorable conditions. What I shall have to say is largely a matter of experience of myself and some of my colleagues, and I shall make no apology for speaking freely in the first person.

The teaching of pediatrics, in the sense in which I shall use it, is not restricted to formal instruction of undergraduate and postgraduate students alone. The resident and the intern are with us to learn and to be taught, and, let us acknowledge it freely, to teach us in turn. Furthermore, any hospital organization that does not constantly teach the attending man to be a better clinician, a better diagnostician, a better therapist and, what is equally important, a better and more enthusiastic teacher and student, is not conducted along the most effective lines. Medicine is coextensive with time itself, and he who no longer learns is medically moribund. The value of the wards in this respect is obvious. It is to the peculiar value of the outpatient department as a teaching force that I would direct attention. In doing so I shall take up in order:

1. The relative importance of the outpatient department.
2. The objections to outpatient work and the remedy.
3. The organization and method of conducting an outpatient department.
4. The practical utilization of the outpatient department in teaching.

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* From the Children's Memorial Hospital.
* Read before the Association of American Teachers of the Diseases of Children, Dallas, Texas, April 20, 1926.

RELATIVE IMPORTANCE OF THE OUTPATIENT DEPARTMENT

I think I may safely state as an axiom that a knowledge of what is really going on medically, i. e., a knowledge of pathologic incidence, is acquired fully only in a large private practice, and only in a practice that includes both house and office calls. The nearest equivalent, and the only one available for teaching, is the outpatient department. The acquisition of a practical knowledge of the relative incidence of different pathologic states is one of the most important factors in building up a useful diagnostic ability. The intern whose work is largely with pneumonia, empyema, osteomyelitis, chorea, appendicitis and athrepsia has a surprise in store for him when he gets out in practice and finds that pathologic incidence as it really is, relatively, is largely made up of throat infections and their sequelae, of healthy babies, of children that will not eat, and, after a while, of subnormal children. Ten years may elapse before he sees again a case of chorea or osteomyelitis. A hundred cases of abdominal pain due to throat infections will present themselves before he will see again the case of appendicitis he is so diligently looking for, and probably thousands before he will find a gallstone or a renal calculus as a cause of abdominal pain. Not only is it impossible to acquire in the wards a knowledge of incidence in medicine: the knowledge that is acquired is wholly misleading and must be unlearned in practice. With due allowance for certain obvious differences, what has been said applies also to the full-time man who does not work in the dispensary and never has, and who has never practiced.

The fundamental aim in the teaching of pediatrics is to prepare the person taught to practice pediatrics. The practitioner is called to see a case. It has been expected of him from time immemorial, and rightly so, that he shall state then and there what is the matter with his patient, what is to be done for him, and what is to become of him. The case may not be perfectly clear, and a further examination may be necessary. He may even occasionally want a blood count; not often, though sometimes imperatively so. Sooner or later, he will probably want urinalysis. He may want a roentgen-ray picture. The vast majority of diagnoses, however are made, and made correctly, on the spot, with the aid of only a stethoscope, a spoon, a thermometer and an otoscope. Exactly the same conditions obtain in the outpatient department, and nowhere else. The large number of cases at once accessible to the younger man in the dispensary gives him greater clinical opportunity of this kind than the smaller number in the wards, or in his private practice during his earlier years. The hospital case is furthermore usually a more serious one, with more striking and therefore more easily recognizable symptoms and signs. The new intern can make an accurate diagnosis on a high percentage of all ward cases, because they more nearly approach the textbook and lecture description. He has all the laboratories and special examinations at his disposal; what is often more important, he has time in which to develop an opinion and to prescribe a course of treatment. If he is put in the dispensary before the simplest and most common type of case, he will flounder hopelessly. These cases are not emphasized in the books and have seemed too trivial for clinical demonstration. The first baby that he sees that has a fever and is vomiting because it has a throat infection he will probably treat for "bowel" trouble, because as a student he spent hours with "bowels" and not one hour with the throat as a pediatric and not an otolaryngologic entity. The man who, without all the accessory aids of a hospital ward and of time, sizes up a case on the history and the physical findings as revealed to his eye, ear, nose and fingers, and records his diagnosis in writing, is at least traveling a road that leads to diagnostic and therapeutic ability of the highest and most useful order. A wrong diagnosis, publicly committed in ink, checked by subsequent developments or by consultation, is a most instructive agent. We learn acutely and everlastingly by our mistakes. The outpatient department, properly conducted, offers the greatest opportunity for this particular training.

Another important aspect of dispensary practice, as compared with ward practice, is the ability to follow up cases for years. The man who sees only ward patients treats a case; the man in private practice and in the dispensary treats a child. One sees a disease, the other a child with a disease. What becomes of the rachitic child later on? How do his first and second teeth compare with those of what was a normal baby? What becomes of the syphilitic child with a very large liver, or meningeal symptoms? What is the fate of the child with congenital heart trouble without cyanosis, or of the one with adhesive pericarditis or rheumatic nodules? Does the child with celiac disease grow to normal stature and has it a normal mentality? Why is the mongol rarely seen after the fifth year? It is of tremendous pedagogic value to be able to say: "I saw this child, now 7 years old, when he was 6 months old. He then had so and so; he now shows so and so." There is some pedagogic value in seeing after a time our medical grandchildren: the baby, for example, whose mother we treated for syphilis when she was a baby.

This can be accomplished, of course, only if the patient returns each time to the same clinician. While this cannot always be done in a large clinic, it can nevertheless be done to a very useful degree. For this reason, it would seem pedagogically unsound to have one man take only heart cases for three months; then only babies for three months; then runabouts for three months, as is done in some clinics. It would seem even more unsound, as I have seen it in some clinics, to have certain men see only new patients on certain days, and old patients on other days, without any reference to whether they have seen them before. The man who takes the history has a knowledge of, and an interest in, a patient that it is hard to transmit to the next man. We can all remember in our intern days how hard it was to get interested in the old case handed on to us when the services changed, as compared with the new case that we worked up ourselves. For all these reasons, the closer one sticks to the methods of private practice, the greater the teaching value to the clinician and the greater the benefit to the patient. To be on a "Tom, Billy and Mary" basis has a sound pedagogic value.

Another important item in outpatient practice lies in the fact that while, in the wards, we treat cases as more or less detached and isolated pathologic entities, in the dispensary we treat not only the child but also its mother. The art of treating the mother is at least 50 per cent of pediatric practice, to put it very conservatively. How we handle a baby, whether we wash our hands between cases, what we say to the mother, are commonly far more important for the baby and for our professional standing in the family than is

the prescription. It is of peculiar value to learn to be patient with, and understandable to, an ignorant and worried mother, and to learn above all else how to tell her the one and only thing she cares about, the prognosis. Hippocrates said many years ago that the greatest art of medicine lay in the prognosis. A practitioner once told me of a certain neurologist who was "wonderful" when it came to giving the family the prognosis, and for that reason he always had him in consultation whenever possible. A Chinese family whose children I used to treat and who were short on English invariably expressed this universal reaction by one word. Before I got fairly started they would ask, "Dangerous?" The art of prognostication has plenty of exercise when the mother and the relatives are there, as they are in the home and in the dispensary; the outlook must not only be thought about as interesting; it must also be expressed; and the very words are burned in their memories, often to our later discomfiture.

The outpatient department is again the place in which to learn the great art of infant feeding. It is here that the normal baby is encountered, the 95 per cent that escape commitment to a hospital ward. Probably more than 95 per cent of all babies can readily be fed in a dispensary. In private practice, the need for a hospital hardly exists any longer for this class of cases. Nowadays, thanks to the infant welfare stations especially and to many other agencies, babies are kept well and the practitioner need hardly know in private practice the words athrepsia, intoxication, anhydremia, summer complaint, or dysentery. If he wishes to see these, he will find them in baby wards, often many more than are admitted as such. The intern who sees only hospital feeding is being taught next to nothing about infant feeding as he will encounter it in private practice. If he does not unlearn much, he will find himself shooting sparrows with a cannon. In the outpatient department, he will find the ideal training school for the simple feeding under normal conditions.

In the hospital, again, the whole point is, or should be, to meet an emergency. What becomes of the baby when he gets home, and later? For some time, for both therapeutic and pedogogic reasons, we have asked the interns in the infant ward services to have the babies dismissed as quickly as possible and to have them return to the intern personally for a time, so that he might learn the great difference between feeding a baby as a member of a herd in a ward, and individually in a home, even a poor one. Then, too, in the ward the feeding problem is not merely a feeding problem. Nearly every baby can today be fed successfully with any one of a number of favorite foods or methods. It is the upper respiratory tract infection and its complications that kills babies in the wards, not the nutritional disturbance itself. These infections have practically no bearing on the feeding problem in private practice, and again the intern must go through the process of unlearning. The better the outpatient department, the fewer the cases in the wards, and the lower the death rate. We strive to keep our baby wards as nearly empty as possible. Even the excuse that one needs some cases for experimental and teaching purposes is a lame one, for such teaching is of little value in practice, and especially if it leads to an ultimately higher death rate. If, as John Dewey used to teach us, "the object of an institution is to do away with itself," then one can only hope that the baby ward will fulfil its object.

OBJECTIONS TO OUTPATIENT SERVICE AND THE REMEDY

The objections to working in the outpatient department are partly traditional and partly well founded. There is still a tradition that the outpatient man is a sort of "dollar a year" philanthropist. It is our practice to make the newest recruit in the dispensary a part of the regular staff, with a title, and a voice and a vote in the staff meetings, on a footing of equality with those in the wards.

One of the most frequent objections is the fact that dispensary cases are largely made up of colds, grips, ears, coughs, running noses, and such "uninteresting and monotonous" things. This very monotony has two valuable pedagogic aspects—it prepares one for private practice in which the identical condition exists even more luxuriantly; and, secondly, only in this way can we get a real idea of that proportional incidence that is so valuable in the practice of medicine. Even though there is a certain monotony, this should certainly not be felt too acutely in the first five or even ten years. I have been interested in throat infections for twenty years, and their vagaries interest me more and more rather than less and less. Then, too, out of eight or ten cases there will surely be one that will be interesting in itself, and expectation is half the fun of fishing. Furthermore, in a large outpatient department, if there is free interconsultation and demonstration, there is rarely indeed a period in which there are not several instructive cases. Nowhere in a hospital is a congenial and instructive camaraderie so readily formed and so fruitful as in a large outpatient department.

Another objection that is cited is the fact that the cases in the dispensary are not fully "worked up." There are those who cannot size up a case properly until it is all worked up. History, blood count, urinalysis, Wassermann reaction, blood chemistry and physical examination, all must be laid on the table and pieced together like a cut out puzzle. Such men have no place in a dispensary; and while they may be very successful financially by making a big case out of every simple thing, they do not render the maximum medical service. At least 90 per cent of all cases can be adequately passed on without those aids. Another 5 per cent or more require only a blood count, a urinalysis or a roentgen-ray examination. The few remaining patients can be sent into the wards for intensive study and treatment, where their progress can be followed if desired by the original clinician. When the patients are dismissed, they can be returned to him with a record or a clinical note. If there is a necropsy, he can follow it to the morgue or to the clinical pathologic conference.

An invaluable aid in maintaining interest and in enhancing the teaching value of a dispensary service is the attendance, or at least accessibility, of an older, more seasoned clinician, at the regular dispensary period. There should, of course, be a chief of clinic, who supervises the practical conduct of the clinic and who acts as a sort of consultant. It is my own practice to begin rounds during the latter part of the dispensary period and commonly to pass through the dispensary at the beginning of my rounds. If this is not done, I am always accessible for consultation on some unusual case. By this arrangement the younger man has a consultation on any puzzling case while it is hot; I have the benefit of seeing all the unusual cases with a minimum of effort and of time, and perhaps the patient profits by it. It has always seemed to me,

further, that the older clinician should constantly be eager to give the younger man the benefit of his larger and maturer experience. Nothing stimulates a younger man to "look and learn" more than to have things pointed out to him that have escaped his observation. To this the outpatient department lends itself perhaps more than any other. What I mean can best be illustrated by what someone who conducted a dispensary near Düsseldorf once said, ingenuously, of Schlossmann: "It's a strange thing; we go along for weeks without anything unusual, but every time Schlossmann comes to visit us we have a most interesting lot of cases."

There is one objection to outpatient work that is very valid, unless it can be overcome; i. e., the drudgery of history writing and of recording examinations and progress of the case. And at least 50 per cent saving of time can be effected if this can be eliminated. If one has undergraduate students, they can do the actual clerical work and get valuable instruction from it. This time consuming feature has been effectively remedied at our hospital by having a writer for each clinician. There are a few paid writers, but nearly all of them are philanthropically inclined volunteer workers of a high grade of intelligence and faithfulness. The clinician dictates as he proceeds, losing very little time, and getting, besides, a most valuable experience in dictation. As a result we have good histories and follow-up notes, something badly needed in many dispensaries.

As an antidote to staleness, every outpatient man is urged to stay out of the dispensary for at least two months each year. Those longest in service can also be given each year at least three months in the wards.

ORGANIZATION AND METHOD OF CONDUCTING AN OUTPATIENT DEPARTMENT

There are a few other factors that enter into the organization of an outpatient department if it is to be most attractive and instructive to the clinician as well as most beneficial to the patient.

There must, first of all, be plenty of attending men. Eight or ten cases per man is enough for a two hour period. There must be time enough to think and to consult with others. Three periods a week would seem a minimum; four or five is often better for the younger man. There must be a well organized and plentiful nursing force. Not all of this group need be nurses. Much of the work can be done by volunteer workers who have the intelligence, interest and leisure to take dictation, weigh babies, take temperatures, and prepare and steer patients to their proper places. There must of course be an active and ample social service department on the spot at the time as an integral part of the clinic itself, to weed out the patients that are too affluent; to follow them into the home if desirable and to see that they return for further observation and treatment if they are negligent, or if they are interesting from a clinical point of view. The social service is absolutely indispensable to any statistical investigation for which the dispensary is peculiarly adapted.

While a dispensary should be well organized along simple lines, it has always seemed to me that too high a degree of organization has a sort of mechanical, disindividualizing and dehumanizing effect. A few red and yellow and green slips are necessary, but I think there should not be too many, and that the physician should not be burdened and distracted by them to any extent. There is to me something unpedagogic too, about printed feeding slips for various ages. Feeding a baby is still an individual problem, and should be considered so by the mother and the physician. There is to my mind a tangible pedagogic loss to the younger man who fails to avail himself of the benefit that comes from individualizing with the mother, instead of fishing out a slip labeled with a number corresponding to the baby's age, a slip that has been prepared by someone else. It may be necessary to some extent in a large clinic, but is there not, in essence, the same objection to it that there is to the printed directions for the mother of a healthy baby that go with such otherwise excellent foods as Mellin's, or Imperial Granum? One is tempted to philosophize further. I know of a town in a nearby state in which a large number of babies are fed according to the slips furnished a few of them by a prominent pediatrician. Why consult a physician at all if the thing is so simple and easy, and the baby is apparently healthy? And they don't; and if the baby is not standard, the pediatrician and his formulas are blamed.

The question of special clinics is always an important one. To what extent specialization shall be introduced must depend on the size and nature of the individual clinic and on how well it is manned. The man who conducts a special clinic is deprived to some extent of the experience that the rest of the clinic affords. If there are too many special clinics, those who have none are deprived of the benefit of seeing that class of cases, and their material is limited. The special clinic is therefore a compromise that must be met according to circumstances. That the patient is better cared for in a special clinic is, of course, self evident. The mother is encouraged to bring the child back more faithfully, knowing that she will see the same physician each time, and that he will remember her child and his pathologic condition and will have an interest in him now and hereafter. It is equally obvious that the special clinician has an opportunity to perfect himself in a given line, and it should be required of him that he carry on some statistical or other investigation for which this work specially lends itself. The value of all this is enhanced and the work unified if the man who conducts a special clinic in the outpatient department is also assigned to all cases of the same nature in the wards. Special social service workers must be assigned to every such clinic, and they should be as permanent as possible.

To obviate the objections to special clinics already mentioned, there must be some arrangement by which all the men can profit by them, as well as the special clinician and the patient. Rotating services do not meet the requirement. All the advantages to the special clinician and to the patient are lost by this arrangement. In a large enough clinic, this requirement is best met, it seems to me, by having special clinics permanently manned by clinicians especially interested in the subject to which they are assigned. These men should not only acquire a greater knowledge and a certain degree of authority on the subject in the clinic, but also be able and eager to impart to others the special knowledge that they are thus privileged to acquire. Such clinics are held on only one or two days a week, and an arrangement can be made by which those in the general clinic can be assigned for three month periods as assistants in the special clinics. With, say, four special clinics, each man would thus assist at all of them during each year. While carrying on his own

work he would still be able to see intensively, under more favorable circumstances, a larger number of these special cases than he would if they were assigned in rotation to all the attending men. With enough material and men, this arrangement can be extended to the wards as well in some clinics.

In a large clinic there should be at least four such special clinics: cardiac, including rheumatism and chorea; neurologic and psychiatric; syphilitic and dermatologic. The list can be extended, permanently or temporarily. We have found it of the greatest value to have a special clinic for nephritis. In the last five years all of these cases in the wards and in the outpatient department, some 150 in number, have been followed by one man with very interesting and productive results. Special groups of cases, such as eczemas, asthmas, anemias, goiters and those in which the effect of light therapy can be studied, can be set aside at any time for intensive study by one man or group of men. There is a certain advantage in having special baby clinics. The baby requires a little different nursing technic in the handling, and a lot of lost motion can be obviated by having each man concentrate, say one or two days a week, on babies only. While continuity of service under the same man cannot be carried out fully in this way, it can be done except in the case of the sicker patients that come several times a week. With these, it cannot be done fully under any circumstances. On each regular day of attendance at the baby clinic, the baby should return to the original clinician.

Special clinics offer a valuable contribution to formal teaching. For both graduates and undergraduates, they furnish a large amount of concentrated, grouped, easily accessible clinical material that can be presented to the best advantage by a man especially equipped to present it.

I have said before that it greatly enhanced the interest and teaching value of a dispensary if the older clinicians visited it regularly, or at least were accessible for consultation. In our own outpatient department, we have another arrangement that I believe also makes for the same effect. During the months that we have postgraduate courses, I have a small amphitheater clinic four days in the week during the last hour of the dispensary period. It is largely a rapid fire diagnostic and therapeutic clinic and is made up of the interesting patients that have come in that day, or that have been especially asked by the dispensary men or nurses to come back for that clinic. Most of the cases I have never seen. I have always preferred that kind of a clinic to a formal, worked up one, partly because of its effect on the clinic; partly because it entails no special preparation but perhaps even more because of what I get out of it myself. I know of no better antidote to that sort of medical inbreeding that effects all of us if we think and practice by ourselves than to show in public a half dozen patients one has never seen before, in the presence of interns and perhaps of attending men, who have a friendly interest in seeing a mistake in diagnosis or interpretation. With such a clinic, there must go a perfect alibi-less willingness to admit all mistakes, in itself a valuable factor in teaching the real status of the art of medicine. I have myself never subscribed to the doctrine of the infallibility of the "professor." For very good reasons it finds few adherents among students, and none among interns. To such a clinic all of the interesting and puzzling cases are sent by the dispensary men, and it serves as a sort of clearing house, or even a forum, for discussion and consultation.

THE PRACTICAL UTILIZATION OF THE OUTPATIENT DEPARTMENT IN TEACHING

In calling attention to the outpatient department as a teaching force in pediatrics, I have purposely discussed principles rather than the concrete details that naturally follow and that must vary with each clinic. I shall close with a brief summary of the practical utilization of the dispensary as it appeals to us in the teaching of the various groups that are benefited by it.

The younger attending man here sees pediatrics as nearly like that which he will find in practice as it is possible to find it. He sees in rapid succession a large number of cases that are not textbook cases; that represent a fairly accurate cross section of pathologic incidences, and that he must pass on without the aid of time and the laboratory. This benefit, in different ways, accrues equally to the chief and to the youngest recruit on the dispensary staff. The man who can no longer learn from a dispensary can no longer learn medicine.

The intern and resident can learn a great deal in the dispensary, especially if it is included in the daily rounds or if they are a part of its organization. At the beginning of their hospital service, they are still interested in the classic textbook case. The attending man can teach them much that they have not found in the books and much that they do not yet know about the relative incidence of disease, and can stimulate them to sharpen their observation by calling their attention to things that have escaped their less trained eye, ear, nose and finger. It is our practice to put the intern who has had a year or more in a general hospital and ten months in our hospital into the outpatient department for the last two months of his service. He serves in the capacity of attending man during the clinic hour and as admitting man day and night for two months. It is universally recognized by them as the most attractive, valuable and far and away, the most individually responsible service of the year. One man actually shed tears when it was necessary to cut his service down to four weeks, and he was appeased only when we promised to let him work in the dispensary for another four weeks after the end of his internship.

In undergraduate teaching, the student in his junior or senior year can be assigned cases in the dispensary. He can in turn write the history; examine the patient; go over him with his attending man; make any further examinations, laboratory or otherwise; record his findings and treatments, and follow the patient during his stay in the dispensary, making notes on his progress.

The short course postgraduate student can hardly be admitted to the outpatient department except as an observer, and then not to the best advantage unless personally conducted. A clinic with material drawn from the outpatient department, in which the case is new both to the student and the clinician, and in which the student can see the case unfolded before him as it is done in practice by an experienced clinician, is especially adapted, it seems to me, to this type of teaching.

The longer course graduate student can well spend a year in the outpatient department, for a time as assistant, and, as soon as feasible, as attending man. He will get no more valuable practical training anywhere.

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THE RATIONALE OF SPECIFIC THERAPY IN PNEUMOCOCCUS PNEUMONIA *

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For the last seven years we have been interested in the specific treatment of lobar pneumonia. During this time several specific agents have been tried on monkeys with experimental pneumonia and on patients with lobar pneumonia in the wards of Bellevue Hospital. As a result of this rather extensive experience, we have arrived at certain conclusions which it seems worth while to publish.

In this paper we will attempt to elucidate the rationale of specific therapy in pneumonia and will state our present position on the whole subject. The experimental and clinical data reported have been published, in part, in previous scientific articles, but they are reprinted here for the purpose of exemplifying certain principles relative to the bacteriology and immunology of pneumococcus pneumonia.

TOXEMIA AND SEPTICEMIA

The great majority of acute infections pass through one or both of two stages: First, local infection, an inflammatory process in which the bacteria remain localized and produce systemic symptoms by virtue of a toxin which is discharged into the circulation, and second, generalized infection, a more serious phase of the disease in which the bacteria gain access to the blood and produce a septicemia. The commoner pyogenic infections are usually localized, but may progress at times to the septicemic stage. Carbuncle (staphylococcus), mastoiditis (streptococcus) and meningitis (meningococcus) are all much less menacing to life as long as the blood remains free of bacteria. When septicemia develops, the prognosis becomes grave. Scarlet fever, another streptococcus infection, is essentially a toxemia, and as such is usually a comparatively mild infection. The fatal cases are nearly always complicated by streptococcus septicemia.

Pneumococcus pneumonia differs in no respect from the infections mentioned above. Starting out as a local process in the lung, it soon produces symptoms of toxemia, but the life of the patient is rarely in danger as long as the blood stream remains sterile. With the development of septicemia, the situation becomes serious, as we shall presently show.

Infection, then, manifests itself as a toxemia or a bacteremia, or both. Specific serums are either antitoxic or antibacterial. The so-called antitoxins (diphtheria, tetanus and scarlet fever) are good examples of antitoxic serums. Antimeningitis serum, on the other hand, is an antibacterial serum. At the present time there is no antitoxic serum for pneumococcus pneumonia. The antipneumococcus serums now in use are essentially antibacterial in nature. Their prime function is to prevent septicemia, or to check it when it has already developed.

We will now proceed to a more detailed study of the various phases of this question.

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PNEUMOCOCCUS IMMUNITY

Years ago, Neufeld [1] showed that animals vaccinated with pneumococcus cultures, killed or living, developed an immunity against the organism. This fact has been amply verified by other investigators, more recently by Cecil and Steffen,[2] who found that monkeys vaccinated against pneumococcus were immune to pneumococcus pneumonia. Cecil and Blake [3] noted that a similar immunity to pneumonia existed in monkeys that had recently recovered from the disease.

Pneumococcus immunity is probably dependent on a number of factors, such as agglutinins, precipitins and opsonins but the most conspicuous and probably the most important of these immune substances are the so-called protective bodies. The "protective bodies" (or the "protective substance") receive their name from the fact that mice, when they are injected with virulent pneumococci, may be protected from death by the simultaneous injection of a certain amount of antipneumococcus serum. This protective substance in antipneumococcus serum has never been isolated in a chemically pure form, but it can be removed from serum by various chemical procedures. Dochez [4] found that patients recovering from lobar pneumonia developed protective bodies against the pneumococcus at about the time of crisis. He inferred, therefore, that they played a significant part in pneumococcus immunity.

The next important step in the study of pneumococcus immunity was the differentiation of the four types of pneumococcus. This classification was started by Neufeld and developed to its present state by Dochez and Gillespie.[5] Pneumococcus immunity is highly specific for type. For example, immunity against pneumococcus type I confers slight, if any, immunity against the other types.

While the human organism is manufacturing protective bodies to defend itself against the pneumococcus, the pneumococcus in turn is producing a substance which has the power of neutralizing the protective bodies. This has been investigated by Avery and Heidelberger,[6] who call it the S substance. The S substance is always present in broth cultures of virulent pneumococci. It can also be demonstrated in empyema fluid of pneumococcal origin, and in the blood of patients with pneumococcus septicemia. The S substance, like the protective substance, is rigidly specific for each type of pneumococcus.

THE SIGNIFICANCE OF BACTEREMIA IN PNEUMOCOCCUS PNEUMONIA

In an analysis of fatal cases of pneumococcus pneumonia, one of the outstanding features has been the high incidence of bacteremia in these cases. The work of Cole and his associates [7] in their studies on pneumonia at the Hospital of the Rockefeller Institute, and of Bloomfield [8] at Johns Hopkins, has emphasized this

1. Neufeld and Handel: Arb. a. d. k. Gsndhtsamte **34**: 293, 1910.
2. Cecil, R. L., and Steffen, G. I.: J. Exper. Med. **34**: 245 (Sept.) 1921; **38**: 149 (Aug.) 1923.
3. Cecil, R. L., and Blake, F. G.: J. Exper. Med. **31**: 685 (June) 1920.
4. Dochez, A. R.: J. Exper. Med. **16**: 665, 1912.
5. Dochez, A. R., and Gillespie, L. J.: A Biologic Classification of Pneumococci by Means of Immunity Reactions, J. A. M. A. **61**: 727 (Sept. 6) 1913.
6. Heidelberger, M., and Avery, O. T.: J. Exper. Med. **38**: 73 (July) 1923. Avery, O. T., and Heidelberger, M.: Ibid. **38**: 81 (July) 1923. Heidelberger, M., and Avery, O. T.: Ibid. **40**: 301 (Sept.) 1924. Avery, O. T., and Heidelberger, M.: Ibid. **42**: 367 (Sept.) 1925.
7. Avery, O. T.; Chickering, H. T.; Cole, Rufus; and Dochez, A. R.: Monograph 7, Rockefeller Institute for Medical Research.
8. Bloomfield, A. L.: The Therapeutic Value of Type I Antipneumococcus Serum, J. A. M. A. **81**: 1437 (Oct. 27) 1923.

point. In Bellevue Hospital, our experience confirms the observations of these investigators.

Blood cultures were taken on 107 patients with lobar pneumonia in the wards of Bellevue Hospital in order to determine the relation of bacteremia to the death rate. In this series, blood was taken for cultures from one to twenty-one times from each patient, three blood cultures to each patient being the average number. Beef infusion broth and blood agar plates were used for the cultures. Two cubic centimeters of blood was drawn from the patient's arm, 1 cc. added to plain broth, and 1 cc. plated out in agar.

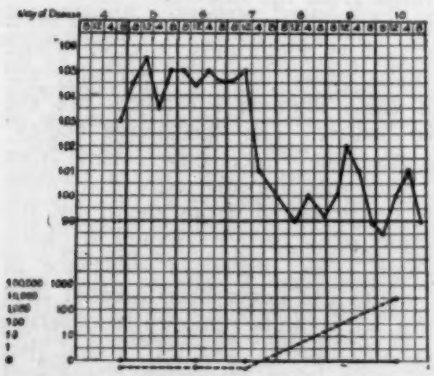

Chart 1 (case 1).—Pneumococcus type I pneumonia; development of pneumococcus type I protective substance in the circulating blood after crisis; blood sterile throughout. In this and the following charts (chart 5 excepted), the upper solid line indicates the temperature; the lower solid line, the number of pneumococci to each cubic centimeter of circulating blood. The broken line indicates the amount of protective substance in the blood, expressed in terms of lethal doses of pneumococcus cultures which the mice survived. The small arrows at the top show when serum or antibody was injected, and the dosage.

Table 1 shows the figures obtained from this experiment.

It will be observed that in all four types the death rate was very high in cases in which there were positive blood cultures. The death rate was somewhat lower in the septic type I series than in the other three types, but this difference was most probably due to the effect of specific therapy. Furthermore, it will be noted that the incidence of positive blood cultures in the various types is roughly proportional to their respective death rates. The occurrence of bacteremia in the less virulent type I and type IV infections is comparatively low, while in the more severe type II and type III infections the incidence of bacteremia is distinctly higher. Finally, the total mortality rate for thirty-seven patients with pneumococcus pneumonia and with positive blood cultures was 78.3 per cent, in contrast to a death rate of 10 per cent of seventy patients with sterile blood cultures.

TABLE 1.—*Relation of Bacteremia to Death Rate in Pneumonia*

Types of Pneumococcus	Cases Studied	Cases Showing Positive Blood Cultures		Cases Showing Sterile Blood Cultures	
		Cases	Deaths	Cases	Deaths
I	39	11	6	28	3
II	22	14	13	8	1
III	11	4	3	7	1
IV	35	8	7	27	2
Total	107	37	29 78.3%	70	7 10%

THE SIGNIFICANCE OF PROTECTIVE BODIES IN PNEUMOCOCCUS PNEUMONIA

We have undertaken to determine the relation of the presence of protective bodies in the patient's blood to the course and prognosis of the various types of pneumococcus pneumonia. The blood from patients has been collected from day to day and its content of protective substance measured by the mouse method. The amount present has been compared with the patient's general clinical condition, as well as with the blood culture and other laboratory observations.

In a series of twenty-five cases in which blood was taken to determine the presence or absence of protective bodies at various intervals during the course of the disease, eight cases showed protective substance present for the first time at, or just after, the day of crisis. Twelve cases showed protective bodies in demonstrable amounts at least two days before the day of crisis, a condition somewhat at variance with the work of Dochez, who found that, as a rule, the appearance of protective bodies coincided rather sharply with the period of critical fall in the temperature. Five cases showed no protective substance whatever during the course of the infection, and all five cases terminated fatally.

Case 1 affords an example of the appearance of protective bodies in the blood shortly after crisis.

REPORT OF CASES

CASE 1.—The patient (chart 1) had a type I pneumonia with crisis on the seventh day. Up to the seventh day, no protective substance was present in the blood. A specimen of blood taken two days after the crisis showed a large amount of protective substance. The blood cultures were sterile throughout the course of the disease.

CASE 2.—This case illustrates the fact that protective bodies may appear very early in pneumonia, and that they are not necessarily coincident with the appearance of crisis or lysis. The patient had pneumococcus type II pneumonia. He appeared to be very ill on admission with delirium, high fever, dyspnea, and cough with rusty sputum. In spite of these symptoms, a specimen of blood taken on the first day of his disease showed a considerable amount of protective substance against pneumococcus type II. On the second and third days of the disease, the patient was still quite ill, and continued to have a high temperature, although the blood showed marked protective power. The crisis occurred on the fourth day, and the toxic symptoms disappeared. On the day of the crisis, protective substance was present in the blood in no greater amounts than on the previous days. Blood cultures were sterile throughout. The patient received several injections of Huntoon's pneumococcus antibody solution subcutaneously. We have been unable to demonstrate an increase in protective substance in the blood following the administration of antibody solution subcutaneously. Furthermore, the first specimen of blood showing protection was taken *before* any antibody had been given. The influence of specific treatment can therefore be eliminated in this case.

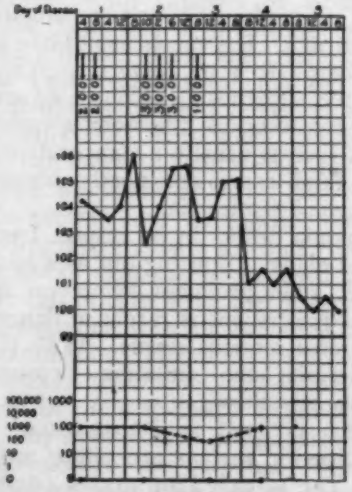

Chart 2 (case 2).—Pneumococcus type II pneumonia; pneumococcus type II protective substance in blood on first day of disease; crisis on fourth day; blood cultures sterile.

This protocol illustrates the possibility of toxemia even when the blood contains high protective power. Indeed, it occasionally happens that a patient will die when protective substance is present in the blood. However, the great majority of patients that develop protective substance recover.

THE RELATION OF PROTECTIVE SUBSTANCE TO PROGNOSIS

The importance of the protective bodies in relation to prognosis is indicated in table 2.

Of twenty patients who showed protective bodies at some time during the course of the disease, only three died. Two of these showed protective bodies in the blood on the day of death. Three patients showed

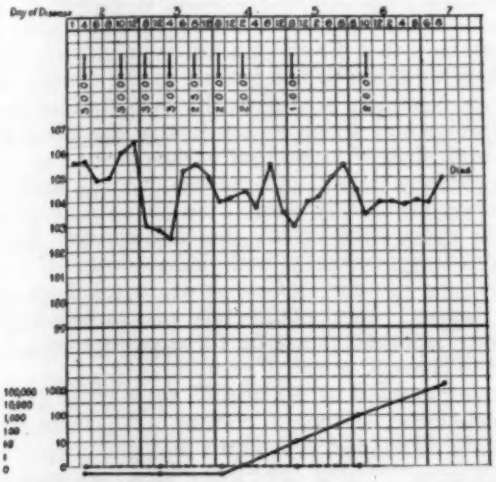

Chart 3 (case 3).—Pneumococcus type II bacteremia appearing on the fifth day; no protective substance in blood; death on seventh day.

protective substance in the blood at the time empyema developed. Of five patients who failed to develop protective substance at any time during the disease, all died. It may therefore be inferred that the presence of protective substance in the great majority of cases is of favorable prognostic significance.

BACTEREMIA AND ITS RELATION TO THE APPEARANCE OF PROTECTIVE BODIES IN THE BLOOD

As might be expected from the association of bacteremia with death, and the development of protective substance with recovery, pneumococci and homologous protective bodies are very rarely found simultaneously in the blood. In the course of our investigations, the relationship between bacteremia and immune bodies in

TABLE 2.—*Relation of Protective Bodies to Prognosis*

Cases	Number	Died
Showing protective bodies during course	20	3
Showing definite protective bodies on day of death	2	2
Protective bodies present with empyema	3	0
Showing no protective bodies during course	5	5

the blood has been studied in thirty-one cases of pneumonia, including all three of the fixed types. In a total of 146 specimens of blood collected from twenty-six patients with pneumonia, bacteremia and protective bodies were demonstrable simultaneously in only one instance. In the absence of protective substance, bacteremia may develop later in the disease with a fatal outcome, as shown in the following case:

CASE 3.—In this patient with pneumococcus type II pneumonia, no protective substance was found in the blood at any time. Relatively late in the course of the infection, bacteremia developed, increasing in amount each day until the time of death. (Pneumococcus antibody solution was given subcutaneously without effect.)

When bacteria are present in the blood during the early stage of the disease, their disappearance at a later date is frequently followed by the immediate appearance of protective substance in the blood.

CASE 4.—This case of pneumococcus type III pneumonia is quite typical of a small group of pneumonia patients that begin by having pneumococcus bacteremia, but recover when protective bodies appear and the pneumococci disappear from the blood. In this case no protective substance was demonstrable in the blood during the period of bacteremia. With the disappearance of pneumococci from the blood, protective substance made its appearance in increasing amounts and recovery followed. The pneumococcus type III isolated from the blood was not influenced by the antibody solution in mice; hence, it is not likely that the subcutaneous administration of the antibody solution in this patient had any effect on the course of the disease, or was responsible for the sterilization of the patient's blood.

THERAPEUTIC INTRODUCTION OF PROTECTIVE SUBSTANCE INTO THE BLOOD

In view of the intimate relationship between recovery from pneumonia and the appearance of immune bodies in the patient's blood, efforts have been made to develop a specific therapy in pneumonia. This consists essentially in the introduction of the various immune bodies into the penumonic patient with the hope of assisting him in his efforts to produce immunity against the disease. In view of the biologic specificity of the different types of pneumococcus, it has been necessary to attack the types separately.

Up to the present time three specific therapeutic agents, more or less similar in their general nature, have been introduced for the treatment of pneumococcus pneumonia: (1) the type I antipneumococcus serum of Cole; (2) Huntoon's pneumococcus antibody solution, and (3) Felton's concentrated antipneumococcus serum.

1. Cole's[7] type I antipneumococcus serum contains agglutinins, precipitins and a large amount of protective substance. Cole showed that after intravenous injection of type I and also type II serum, specific agglutinins

Chart 4 (case 4).—Pneumococcus Type III pneumonia showing termination of bacteremia coincident with the development of protective substance in the blood.

could be demonstrated in the blood of the patient. Cole also emphasized the sterilizing power of type I antipneumococcus serum. On numerous occasions, patients with type I pneumococcus septicemia showed sterile blood cultures after administration of the serum. The marked drop in death rate which resulted from treatment of type I infections with type I antipneumococcus serum was doubtless due in large part to this capacity of the serum to drive the pneumococci out of the circulating blood.

Cole's studies in specific therapy were confined mostly to type I infections. He also worked with type II antipneumococcus serum, but the results were disappointing.

2. Huntoon's [9] pneumococcus antibody solution is an aqueous solution of pneumococcus immune bodies which have been removed from an antipneumococcus serum. This solution is practically free from the proteins of horse serum, and can therefore be injected without any risk of producing anaphylaxis or serum sickness. Pneumococcus antibody solution has the

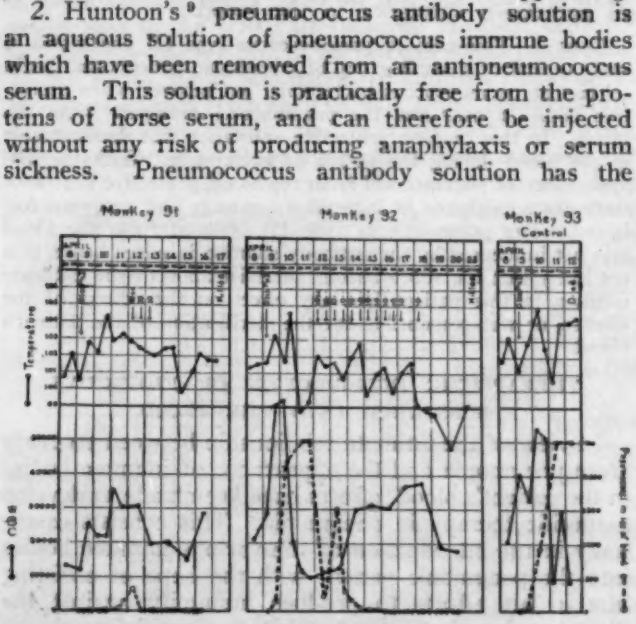

Chart 5.—Experimental pneumococcus type I pneumonia treated with pneumococcus antibody solution; monkeys 91 and 92 each received pneumococcus antibody solution intravenously; monkey 93 was the control; sterilization of blood and recovery in treated monkeys; septicemia and death in control.

additional advantage of containing antibodies against type II and type III pneumococcus. The amount of protective substance, however, against type II is considerably less than against type I, and for type III even less than against type II. Its therapeutic value rests on the same principle as that of antipneumococcus serum: namely, its antibacterial effect. Baldwin and Rhoades [10] found that by injecting Huntoon's antibody solution intravenously in sufficient amounts, a balance of type I protective substance could be established in the blood of both normal persons and patients with pneumococcus pneumonia. Pneumococcus antibody solution in sufficient amounts has the power, just as serum has, of sterilizing the blood of patients with type I pneumococcus septicemia. Because of the relatively smaller amounts of protective substance for pneumococcus type II and type III, its effectiveness is limited in these two types. We have shown, however, that pneumococcus type II septicemia in monkeys can be checked when the antibody solution is administered early.

3. Felton's [11] concentrated antipneumococcus serum is still another solution of pneumococcus immune bodies containing a comparatively small amount of the protein of horse serum. It has the advantage of containing protective bodies in concentrated form. The degree of concentration varies with different lots, averaging from about five to ten times the concentration of type I and type II antipneumococcus serum. The advantage of Felton's solution lies in the smaller amounts necessary to establish a balance of protective substance in the blood. For example, it requires about 100 cc. of type I antipneumococcus serum or of pneumococcus antibody solution to produce a positive balance of type I protection in the blood, whereas such a balance can usually be obtained with from 5 to 10 cc. of Felton's type I serum. In the case of Felton's type II serum, we have found it possible to establish a protective balance with amounts varying from 15 to 25 cc. intravenously.

9. Huntoon, F. M.; Masucci, P., and Hannum, E.: J. Immunol. 6: 185 (March) 1921.
10. Baldwin, H. S., and Rhoades, D. R.: Bull. 141, Hyg. Lab., U. S. P. H. S., 1924.
11. Felton, L. D.: Boston M. & S. J. 190: 819 (May 15) 1924.

THERAPEUTIC VALUE OF PNEUMOCOCCUS ANTIBODIES IN EXPERIMENTAL PNEUMONIA

By subjecting monkeys to experimental pneumococcus pneumonia, it is possible to gage rather accurately the therapeutic value of various antipneumococcus agents. Pneumococcus pneumonia is very fatal in monkeys, and the monkeys that die show a heavy pneumococcus septicemia in addition to the lesions in the lungs. Almost without exception, any agent that will sterilize the blood in experimental pneumonia will save the monkey's life. Cecil and Blake [12] found that in the case of experimental pneumococcus type I pneumonia, type I antipneumococcus serum quickly cleared the blood of pneumococci, and in every case saved the animals that had been injected intratracheally with lethal doses of pneumococcus type I culture. One of us, in collaboration with G. I. Steffen,[13] obtained identical results with Huntoon's antibody solution. One of these experiments is illustrated in chart 5.

Three monkeys 91, 92 and 93 were given fatal doses of pneumococcus type I culture. All three monkeys promptly developed pneumonia and pneumococcus type I septicemia. Three days after infection, monkeys 91 and 92 were started on intravenous injections of Huntoon's pneumococcus antibody solution. In both monkeys, the temperatures began to drop at once and pneumococci disappeared from the blood. Both monkeys made a rapid recovery under the treatment. The control monkey, 93, received no antibody solution, and died on the fourth day with lobar pneumonia and a heavy pneumococcus septicemia.

In this experiment, the intravenous injection of pneumococcus antibody solution quickly cleared the blood of pneumococci, and saved the two monkeys that had received the lethal doses of pneumococcus type I culture. In both instances, treatment was purposely delayed until seventy-two hours after infection, to allow the disease to reach its full development. If treatment had been started twenty-four hours after infection, the monkeys would no doubt have recovered even more quickly than they did. Such experiments were actually carried out by Cecil and Blake with type I antipneumococcus serum. When the serum was administered early, that is, twenty-four hours after infection, the monkeys had only an abortive form of pneumonia, recovering almost at once from their infections.

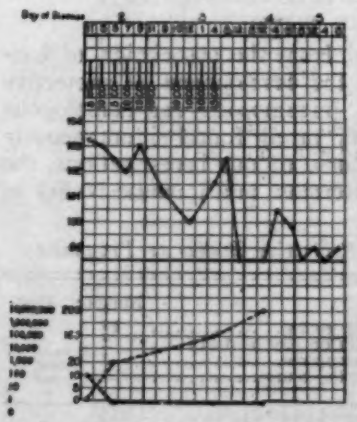

Chart 6 (case 6).—Pneumococcus type I pneumonia; pneumococci disappearing from blood within six hours following the administration of 15 cc. of Felton's type I concentrate. Protective balance established and early recovery.

We have carried out similar experiments with Felton's solution. In these experiments, as in previous

12. Cecil, R. L., and Blake, F. G.: J. Exper. Med. 32: 1 (July) 1920.
13. Cecil, R. L., and Steffen, G. I.: Bull. 141, Hyg. Lab., U. S. P. H. S., 1924.

ones with antipneumococcus serum and pneumococcus antibody solution, the blood could be sterilized and the monkeys saved when the concentrated serum was administered in adequate dosage.

In the case of experimental type II pneumonia, the results have not been so striking, but it is possible to sterilize the blood in some cases of experimental pneumococcus type II pneumonia, if the treatment with serum or antibody is instituted twenty-four hours after infection and pushed vigorously. We have never succeeded in stopping an experimental pneumococcus type III pneumonia with either serum or antibody. We have been equally unsuccessful with experimental pneumococcus type IV pneumonia.

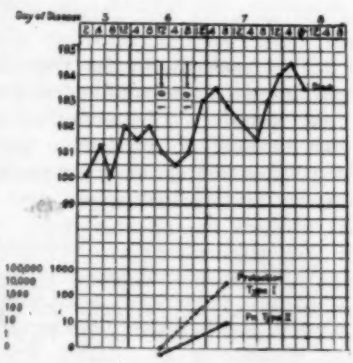

Chart 7 (case 7).—Pneumococcus type II pneumonia; production of pneumococcus type I protection in pneumococcus type II pneumonia after intravenous injection of 20 cc. of Felton's type I antipneumococcus concentrate; pneumococcus type II bacteremia and death.

These experiments on monkeys afford a sound theoretical basis for the therapeutic use of pneumococcus immune bodies in the treatment of pneumococcus type I and type II pneumonia in man. When serum or antibody solution is administered sufficiently early and in adequate dosage, the monkey's blood is freed from pneumococci and the animal recovers.

The principle underlying these three specific agents is the same. All three derive their efficacy from the protective bodies which they contain, and they differ from one another only in their content of horse protein and in their degree of concentration of antibodies. All three when administered early have the faculty of preventing or checking pneumococcus septicemia, and when administered very early of producing an abortive pneumonia. These statements, of course, are applicable chiefly to type I pneumonia. They are true to a less extent for type II pneumonia, but there is no reason to suppose that any one of these specific agents can effect the cure of type III or type IV pneumonia in man except possibly when they induce a nonspecific "shock" reaction.

THE THERAPEUTIC VALUE OF PNEUMOCOCCUS ANTIBODIES IN PNEUMOCOCCUS PNEUMONIA IN MAN

The following protocols show that in both pneumococcus type I and type II pneumonia, a balance of protective substance against the homologous pneumococcus can be established in the blood of a pneumonic patient with relatively small amounts of concentrated serum. They also demonstrate the specificity of the protective substance, and its effect on pneumococcus septicemia.

CASE 5.—A. C., suffering from pneumococcus type I pneumonia, showed on the second day of the disease ten colonies of pneumococcus type I per cubic centimeter of blood (chart 6). Fifteen cubic centimeters of Felton's pneumococcus type I serum was given on the second day. Previous to the injection, no protective substance was demonstrable in the blood. Within six hours after treatment was begun, a "protective balance" for pneumococcus type I was established and the blood culture was sterile. A protective balance was maintained with further injections of serum. There was no recurrence of bacteremia, and the patient had a relatively short febrile course.

CASE 6.—R. C., suffering from pneumococcus type II pneumonia of the right upper, right middle, and left upper lobes, entered the hospital on the fifth day of the disease (fig. 7). Blood cultures were sterile on the sixth day, but became positive on the seventh day. Serum was taken for pneumococcus type I protective bodies on the sixth day, and again on the seventh day after two injections of 10 cc. each of Felton's type I serum. No pneumococcus type I protective substance was present on the sixth day. On the seventh day and coincident with the pneumococcus type II bacteremia, considerable type I protective substance was found, but no type II protective substance. The patient died on the eighth day.

This case illustrates the highly specific quality of the protective substance. It was easy to confer type I protection on the patient's serum by the intravenous injection of two small doses of concentrated type I serum, even at a time when pneumococcus type II was present in the circulating blood.

CASE 7.—J. R., suffering from pneumococcus type II pneumonia (chart 8), on the second day of the disease had a blood content of approximately 200 colonies of pneumococcus type II per cubic centimeter of blood. Following the intravenous injection of 255 cc. of pneumococcus type II immune serum, the blood became sterile. No type II protective substance, however, could be found in the blood stream on the third day. On the fourth day, after 360 cc. of immune serum had been given intravenously, the blood showed protective power to a marked degree. Apparently, the protective substance administered on the first day was sufficient to neutralize the circulating soluble substance and clear the blood of pneumococci. Not enough protective substance, however, was given to provide a positive balance in the blood until after the second day of specific treatment.

CASE 8.—T. A., suffering from pneumococcus type II pneumonia (chart 9), had a pneumococcus type II bacteremia, which cleared up after the administration of Felton's concentrated

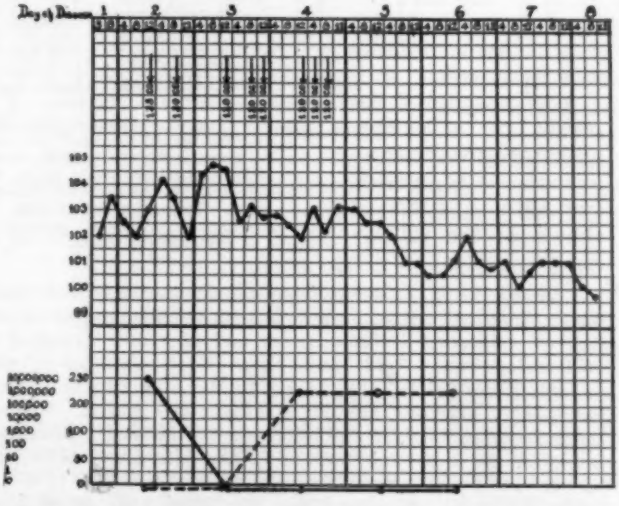

Chart 8 (case 8).—Pneumococcus type II pneumonia; blood sterilized following administration of type II immune serum on the second day; protective balance established in blood after further treatment; recovery.

pneumococcus type II serum. This case, however, differed markedly from the preceding one. Treatment was not begun until the eighth day of the disease. Every lobe was involved in the pneumonic process, and pulmonary edema had already supervened. The patient, instead of being young and of good habits, was a middle-aged alcohol addict, and in delirium tremens. Here, in spite of the disappearance of pneumococcus bacteremia and the establishment of a balance of protective substance after 65 cc. of Felton's concentrated type II serum, the patient died. This chart is shown to emphasize the importance of administering specific therapy early in the course of

the disease. Specific treatment cannot undo the deleterious effects of prolonged toxemia and septicemia. Its function is primarily to check septicemia, but a time may come when the patient, even though relieved of sepsis, is unable to rally from the injuries inflicted by it.

UTILIZATION OF PROTECTIVE SUBSTANCE BY PATIENT

In the foregoing discussion, the unfavorable prognosis associated with bacteremia in pneumonia has been emphasized. The favorable prognosis associated with the development of protective substance in the blood has also been stressed. In the case of penumococcus type I and type II infections, we have shown that by the prompt introduction of sufficient protective substance bacteremia can usually be checked and a definite protective balance established in the blood of the patient.

Cole,[14] in 1917, in some studies on type I antipneumococcus serum, found that, when immune serum was administered to patients severely infected with the homologous type of pneumococcus, the immune bodies injected disappeared very rapidly from the circulating blood. Cole thought that this disappearance of protective bodies was dependent on the presence of a soluble substance in the blood which had the property of neutralizing pneumococcus antibodies. He concluded that the immune serum became effective only when this soluble substance had been neutralized. Recent work by Heidelberger and Avery[6] with a soluble substance obtained from the pneumococcus in vitro confirms this view.

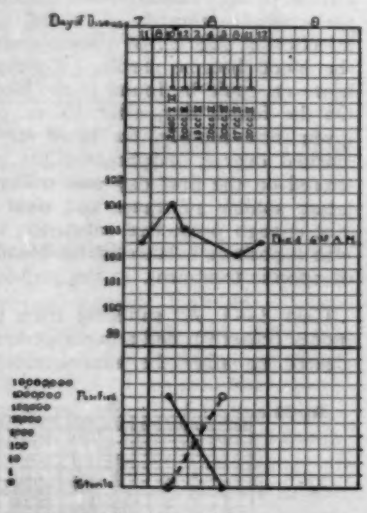

Chart 9 (case 9).—Pneumococcus type II pneumonia; blood sterilized and protective balance established within seven hours following the injection of 65 cc. of Felton type II concentrate; patient died; fatal outcome shows failure of late treatment to overcome deleterious effects of prolonged toxemia.

The capacity of the serum of a patient with pneumococcus pneumonia to absorb immune bodies is shown in the following protocol:

CASE 9.—S. J., suffering from pneumococcus type I pneumonia, admitted on the fourth day of his illness, with a history of recurrent alcoholic sprees and of recent exposure to cold and privation, had frank signs of consolidation present in both lower lobes. On the eighth day, the patient became increasingly delirious, and his condition was grave. A blood culture was sterile. On the following day he died. Leukocyte count on the fifth day showed 7,700 white blood cells with 92 per cent polymorphonuclear leukocytes.

The following experiment was conducted with serum from the patient's blood drawn on the eighth day:

A standard type I antipneumococcus serum was tested out for its protective power on mice. It was found that 0.01 cc. of the serum protected a mouse against 0.5 cc. of a 1:10 dilution of an eighteen hour broth culture of pneumococcus type I. Two-tenths cubic centimeter of the patient's serum was then mixed with varying amounts of the type I serum, 0.01, 0.015, 0.02, 0.025 and 0.03 cc. As a control, a similar set of dilutions of type I immune serum plus 0.2 cc. of physiologic sodium chloride solution were mixed. All the mixtures were then placed in the incubator for two hours. At the end of that time, 0.5 cc. of a 1:10 dilution of an eighteen hour broth culture of pneumococcus type I was drawn up into each syringe, and the contents quickly injected into the peritoneal cavity of a mouse. Further controls consisted of (1) 0.5 cc. of a 1:10 dilution of a pneumococcus type I culture injected into a mouse; (2) 0.5 cc. of a 1:10 dilution of pneumococcus type I culture plus 0.2 cc. of the patient's serum alone, and (3) 0.2 cc. of the patient's serum alone.

The results were as follows: When the patient's serum was mixed with the type I immune serum, no protection whatever was demonstrable in any of the mixtures. With the identical amounts of immune serum and culture, but without the patient's serum, all the mice survived. That the patient's serum was not toxic is shown by the survival of the mice when this alone was injected. No protective power was found in the patient's serum.

This case illustrates the fact that the serum of a patient with pneumonia, even when the blood is sterile, may contain a substance that has high absorptive power for homologous protective bodies. It may be assumed that this neutralizing substance is the S substance of Avery and Heidelberger.

COMMENT

While it cannot be said that the treatment of pneumococcus pneumonia with immune serum has achieved, as yet, the brilliant results obtained in infections such as diphtheria or scarlet fever, we believe that the experiments reviewed in this paper afford a rational basis for the specific treatment of pneumonia, and point the way along which the development of a thoroughly efficient serum must take place. It has been demonstrated by our investigations and those of others that death in pneumonia is accompanied in a very high percentage of cases by pneumococcus septicemia, and, vice versa, that septicemia is usually followed by death. Animal experiments by Bull[15] on rabbits, and by Cecil and Blake[12] on monkeys, have shown that a homologous antipneumococcus serum will sterilize the blood. In this report, instances have been presented in which the sterilization of the blood of pneumococcus type I and pneumococcus type II pneumonia in man followed, and seemed to be due to the administration of homologous immune serum. Also, it has been shown that the presence of protective substance in the blood is of distinctly favorable import in prognosis. Protocols have been given which show that it is possible through the administration of pneumococcus type I or type II protective substance to establish a balance of protective substance in the blood of the patient.

The work of Avery and Heidelberger, already referred to, has shown that the pneumococcus is capable of producing in vitro a soluble substance which has the property of absorbing or neutralizing the protective substance. We have shown that in the blood of pneumonic patients, either with or without pneumococcus septicemia, the same soluble substance may be present and display the same faculty for neutralizing immune bodies.

The recent work of Robertson and Sia[16] with leukocytes and immune serum indicates that antipneumococcus immune bodies are necessary for the phagocytosis of pneumococci. The chief function, then, of pneumococcus immune serum appears to be the preparation of pneumococci for phagocytosis. If the blood stream is filled with "soluble substance," which has the ability to neutralize protective bodies, it is evident that the patient's own efforts at developing an immune response will often be neutralized by the soluble substance of the

14. Cole, R. I.: J. Exper. Med. **26**: 453 (Oct.) 1917.

15. Bull, C. G.: J. Exper. Med. **22**: 457, 1915.

16. Robertson, O. H., and Sia, R. H. P.: J. Exper. Med. **39**: 219 (Feb.) 1924; **40**: 467 (Oct.) 1924.

pneumococcus. If the immune serum is administered early, and continued sufficiently long, the soluble substance may be neutralized, the pneumococci made ready for phagocytosis, and bacteremia prevented.

The patient with pneumonia complicated by pneumococcus septicemia needs a great deal of help. Herein lies the essence of successful specific therapy in pneumonia. The difficulty at present is that the patient often needs more help than we dare to give him with the agents at our command. One hesitates to inject enormous quantities of horse serum into the veins of a sick man for fear of injuring the kidneys, though this danger is probably more imaginary than real. There is no doubt, however, about the discomfort of serum disease, which tends to increase in severity with the amount of serum injected.

Of great importance, therefore, in the practical application of antipneumococcus serums are the problems of purification and concentration. Huntoon's pneumococcus antibody solution is almost entirely free from horse serum and other foreign proteins, and the originator of this agent has recently succeeded in eliminating a large part of the chill-producing substance. In our experience, doses of 50 cc. of the newer lots of antibody solution can usually be injected intravenously with slight if any reaction. Large doses (from 100 to 150 cc.) are still very apt to produce a chill, and unfortunately the larger doses are often needed. Felton has made distinct progress in the concentration of the antibodies, but here again the solutions of higher concentration frequently cause shock reactions, a disadvantage which is often serious when large doses are indicated to check a severe infection.

In the case of pneumococcus type III pneumonia, the serum and serum derivatives have thus far contained such comparatively small amounts of protective substance that their therapeutic value is comparatively insignificant. We have never been able to save monkeys with type III pneumonia, and we have been unable to sterilize the blood in the type III pneumonia of man by specific therapy. The death rate in type III cases treated with serum has been almost identical with that of the untreated cases. Specific therapy, then, for type III pneumonia has little to offer at the present time.

In type IV pneumonia, we are dealing not with one group of pneumococci, but with a larger number of biologically different types. The term "type IV" is merely a term of convenience, for classifying the "waste basket group" of pneumococci. In view of the high type specificity of protective substance, it is obviously impossible to make an efficient type IV serum from a single strain of type IV pneumococcus. However, in Cecil and Larsen's [17] series of patients treated with Huntoon's antibody solution, there was a decided lowering of the death rate in the treated type IV cases. Equally striking results were obtained by Conner [18] in his series treated at the New York Hospital with Huntoon's antibody solution. It is probable that the good results obtained in these cases were due for the most part to the foreign protein, or "shock," reactions which occurred after the intravenous injections. Certainly, the clinical results with Huntoon's antibody solution have not been striking in type IV pneumonia, since the chill-producing substances have been eliminated. It might be possible, of course, to prepare a polyvalent pneumococcus type IV serum by immunizing a horse against a number of independent type IV strains. This, however, is a problem for the future.

17. Cecil, R. L., and Larsen, N. P.: Clinical and Bacteriologic Study of One Thousand Cases of Lobar Pneumonia, J. A. M. A. **79**: 343 (July 29) 1922.

18. Conner, L. A.: Am. J. M. Sc. **164**: 832 (Dec.) 1922.

SUMMARY

From the evidence submitted in this article, it is clear that antipneumococcus serum and its derivatives, when administered under the proper conditions, are capable of exerting a definite influence on the course of pneumococcus type I and type II pneumonia. A specific therapy for these two types of pneumonia is, therefore, theoretically sound. On the practical side, the specific treatment of pneumonia is still handicapped by certain defects in the serum itself, or in the derivatives from it.

With numerous investigators now studying pneumococcus infection, there is every reason to believe that each succeeding year will shed new light on the problem. During the last fifteen years, much progress has been made, but much still remains to be done before a thoroughly satisfactory specific treatment for lobar pneumonia is achieved.

CONCLUSIONS

1. Death in pneumococcus pneumonia is accompanied in a very high percentage of cases by pneumococcus septicemia, and, vice versa, septicemia is usually followed by death.

2. Recovery in pneumococcus pneumonia is accompanied by the development of a protective substance in the blood. Conversely, patients who develop the protective substance usually recover, although a small proportion die of toxemia alone.

3. Pneumococci and the homologous protective substance are very rarely demonstrable in the blood at the same time. In cases of bacteremia, the development of protective substance is followed by the disappearance of pneumococci from the blood.

4. By administering early a sufficient amount of homologous protective substance in the form of immune serum or its derivatives, it is often possible in both type I and type II infections to establish a balance of protective substance in the patient's blood and thereby check pneumococcus septicemia.

5. Successful specific therapy in pneumococcus pneumonia is ultimately dependent on the early administration of an agent sufficiently potent in specific protective substance.

6. In the case of pneumococcus type I and type II pneumonia, satisfactory progress is being made in the development of potent and practically useful therapeutic agents.

33 East Sixty-First Street.

Evils of Tradition in Medicine.—Harvey's life work illustrates, in a remarkable manner, the many sided character of medicine when considered as a whole, and how the men who promote its advance are often men of wide attainments in many branches of knowledge. His greatness is shown by the fact that, notwithstanding the conditions prevalent in his time, he was able to so free himself from the traditions of the past and the influence of authority and dogma as to lay the foundations of modern science by his insistence on the fundamental importance of experiment and of accuracy of observation. Different sciences afford different opportunities for the use of experiment as a means of discovery, but the founder of the science of physiology had, in his field of study, unlimited scope for this method of advance, as prior to Harvey but little had really been effected by experiment, although it had been used by many, even in ancient times. Harvey combined in himself the physician and the physiologist.—Bradford, J. R.: *Lancet* **2**:839 (Oct. 23) 1926.

ETHYLENE IN OBSTETRICS *

E. D. PLASS, M.D.
AND
C. N. SWANSON, M.D.
DETROIT

It is generally agreed by those who have used both nitrous oxide-oxygen and ethylene-oxygen in obstetric work that the latter has the following advantages:

1. Ethylene has a shorter induction period.
2. It produces better analgesia and anesthesia in less concentrations, since it is the more powerful anesthetic agent.
3. It promotes better relaxation, with the result that the addition of ether is less frequently necessary.
4. It induces less cyanosis and less fetal asphyxia.
5. It does not cause sweating or an increase of saliva and mucus in the mouth.
6. It has a greater margin of safety, especially in patients with heart and kidney complications.
7. It is less expensive.

Its possible disadvantages, as gathered from the available literature, may be enumerated thus:

1. Vomiting is probably more frequent, although it is usually mild in character and quite transient.
2. Labor may be slightly prolonged, especially if the gas is given for any considerable period.
3. There may be more profuse postpartum bleeding.
4. There appears to be an inherent danger of serious explosions.

So far as we can ascertain, there is no statistical evidence to support any of the contentions that are open to objective mensuration. We have therefore analyzed our data on 592 patients to whom ethylene-oxygen has been given during labor, and have compared them with similar data obtained from 300 deliveries under nitrous oxide-oxygen anesthesia. The same six operators have been responsible in all cases, and variations due to individual practices have been well eliminated by adherence to the same general routine in the delivery rooms. Nurse anesthetists have given the anesthetics, using a standard gas machine adapted for ethylene as well as for nitrous oxide.

INDUCTION

Although we have no actual data on the rapidity of induction of complete anesthesia, since the anesthetic is used at first merely to produce a slight analgesia, which is gradually deepened and finally leads to full loss of consciousness, it is quite obviously quicker than with nitrous oxide.

ANALGESIA

Davidson [1] has shown that, with a normal subject, ethylene will produce anesthesia at a concentration of about 61 per cent, but that in lower strengths, down to 46 per cent, incoordination alone develops. At still lower percentages, there is some euphoria but no loss of consciousness. King [2] has recorded that he obtained good analgesia in one patient with a mixture of 40 per cent ethylene and 60 per cent oxygen, and Heaney [3] says that occasionally analgesia can be produced with half ethylene and half oxygen. Our own experience is that, in many individuals, satisfactory analgesia can be obtained, in the period before the vulva becomes distended by the presenting part, with a mixture of 25 per cent ethylene and 75 per cent air. Under such circumstances, the patients usually do not lose consciousness, although an occasional very susceptible individual may do so, and declare that they appreciate the pressure associated with the uterine contractions, even though these sensations are not painful. Among 170 patients concerning whom these data are at hand, sixty-six reacted favorably to such a low concentration, whereas in the remainder a greater percentage was necessary to eliminate the pain, a point that was usually reached at 50 per cent. It is obvious that such a method of administration makes the use of the gas much less expensive and at the same time tends to reduce its reputed slowing effect on labor. It is our practice to employ air as the diluent with 50 per cent or less of ethylene, but to change to oxygen whenever higher concentrations become necessary.

RELAXATION

Heaney [4] reports that the addition of ether is not necessary for delivery and that practically all obstetric operations can be done under ethylene alone, and King [2] says that ether is usually not needed. We have made no attempt to develop the full anesthetic effect of the gas and have preferred to add ether rather than to lower the percentage of oxygen to the point at which cyanosis became evident. The addition of small amounts of ether over short periods has been looked on as not essentially undesirable. Table 1 shows the number of cases in which the operator thought it advisable to supplement the ethylene with ether.

TABLE 1.—*Data in Cases in Which Ether Was Added to Ethylene*

Parity of Patients	Spontaneous			Operative		
	Total No.	Ether Added		Total No.	Ether Added	
		No.	Per Cent		No.	Per Cent
Primiparas	270	69	25	48	37	77
Multiparas	256	69	27	18	11	61
Total	526	138	26	66	48	73

Under similar circumstances, nitrous oxide-oxygen gave the results shown in table 2.

TABLE 2.—*Data in Cases in Which Ether Was Added to Nitrous Oxide*

Parity of Patients	Spontaneous			Operative		
	Total No.	Ether Added		Total No.	Ether Added	
		No.	Per Cent		No.	Per Cent
Primiparas	110	88	77	48	46	96
Multiparas	126	87	70	10	9	90
Total	212	175	73	58	55	95

Thus, in only one fourth of the spontaneous deliveries in which ethylene was used was it thought necessary to add ether, whereas such an addition was made in three fourths of the nitrous oxide series. In forty-three instances, ether was added to the ethylene only for the repair, after the delivery had been accomplished without it. With this correction introduced, it will be seen that ethylene was deemed sufficient for delivery

* From the Obstetrical Department of the Henry Ford Hospital.

1. Davidson, B. M.: Studies of Intoxication, III, The Action of Ethylene, J. Pharmacol. & Exper. Therap. 24: 27-48, 1925.
2. King, E. L.: Ethylene-Oxygen in Obstetrics, Am. J. Obst. & Gynec. 9: 835 (June) 1925.
3. Heaney, N. S.: Ethylene-Oxygen Anesthesia in Obstetrics and Gynecology, Surg. Gynec. Obst. 38: 692-694 (May) 1924.
4. Heaney, N. S.: Ethylene and Oxygen Anesthesia for Gynecological and Obstetrical Work, Am. J. Obst. & Gynec. 8: 416-419 (Oct.) 1924.

in 82 per cent of the spontaneous cases. Moreover, increased familiarity with the gas has led recently to its use alone more frequently than earlier, when we were more skeptical about its efficacy.

With ethylene, ether was given in 73 per cent of the operative cases, while the percentage with nitrous oxide rose to 95. Ethylene alone was satisfactory in six breech extractions, ten low forceps deliveries, and two cesarean sections; but in versions, midforceps and high forceps, and in embryotomies, the addition of ether was invariably considered necessary. With nitrous oxide, only three operations were done without ether—one breech extraction, one low forceps and one mid forceps. In the low forceps delivery, a complete tear was caused largely by a sudden expulsive effort as the blades were being removed.

CYANOSIS AND ASPHYXIA

Under ethylene, cyanosis of the patient is very rare, and asphyxia of the child is less frequent than with nitrous oxide. Comparative figures for the latter are shown in table 3.

TABLE 3.—*Data on Asphyxia of the New-Born Due to Anesthetic*

Anesthetic	No Asphyxia	Slight Asphyxia	Moderate Asphyxia	Severe Asphyxia	Asphyxia, Died	Stillbirths, Mac.	Stillbirths, Not Mac.
Ethylene alone	353	13	19	6	4	4	6
Ethylene with ether	157	8	10	6	1	1	4
Nitrous oxide alone	52	10	2	2	2	1	0
Nitrous oxide with ether	163	33	19	6	5	0	5

Of 592 patients delivered under ethylene-oxygen with and without ether, 510, or 86.1 per cent, had children who were designated "not asphyxiated," while among 300 children born under nitrous oxide, only 215, or 71.7 per cent, did not show some signs of asphyxiation. The proportions of stillbirths were roughly the same, but in every clinical degree of asphyxia ethylene had the better record.

During this study of asphyxiation we have also tabulated the effects, or apparent effects, of the antepartum administration of morphine on the condition of the child at birth.

TABLE 4.—*Effect of Morphine on Fetal Asphyxia*

Anesthetic and Opiate	Total Cases	Not Asphyxiated		Asphyxiated and Stillbirth	
		No.	Per Cent	No.	Per Cent
Ethylene-morphine	350	292	83.4	58	16.6
Ethylene without morphine	242	218	90.1	24	9.9
Nitrous oxide-morphine	147	85	57.1	62	42.9
Nitrous oxide without morphine	153	130	84.9	23	15.1
Total	892	725	81.3	167	18.7

In all, 497 patients had at least one dose of morphine or pantopon, and 120 of the babies, 24.1 per cent, showed some asphyxiation, while of the 395 patients who had no opiates, only forty-seven were delivered of asphyxiated children, an incidence of 11.9 per cent. From table 4, it is evident that this increase occurred under ethylene as well as under nitrous oxide, the asphyxiation rate being always greater when morphine had been administered. Opiates were, of course, more generally given in the difficult and prolonged labors and omitted in the easier, but differentiation into such groups was not practical. However, the analysis of our data on the basis of parity gave the information presented in table 5.

TABLE 5.—*Effect of Parity of the Mother on Fetal Asphyxiation*

Use of Opiate and Parity of Patients	Total Cases	Not Asphyxiated		Asphyxiated and Stillbirth	
		No.	Per Cent	No.	Per Cent
Primiparas, morphine	253	266	75.3	87	24.7
Primiparas, no morphine	132	112	84.8	20	15.2
Multiparas, morphine	145	111	76.5	34	23.5
Multiparas, no morphine	264	236	89.4	28	10.6

The fact that the incidence of asphyxiation is so nearly the same in primiparas and multiparas, depending on whether or not morphine had been exhibited, even though the easier labors in the latter group might suggest that it would be less frequent, indicates, from another angle, that the intrapartum use of morphine practically doubles the number of asphyxiated babies.

EXPENSE

The fact that ethylene can be given frequently in concentrations of 50 per cent or less for considerable periods during labor, and that the diluent can then well be air, makes for a greater economy than when nitrous oxide is used. We have approximated with sufficient accuracy the cost of these two anesthetics over a period of several years. The expense of giving nitrous oxide and oxygen to obstetric patients has averaged $2.01 per patient-hour, as against $1.33 per patient-hour for ethylene and oxygen.

NAUSEA AND VOMITING

We have no notes on the occurrence of nausea and vomiting during and following nitrous oxide anesthesia, but in 258 cases of ethylene anesthesia, there are data concerning these symptoms, as given in table 6.

TABLE 6.—*Incidence of Nausea and Vomiting with Ethylene*

Anesthetic and Parity of Patients	No. of Cases	Nausea Only	Nausea and Vomiting	No Nausea or Vomiting	
				No.	Per Cent
Ethylene, primiparas	100	4	20	76	76
Ethylene, multiparas	96	3	30	63	66
Total, ethylene alone	196	7	50	139	71
Ethylene and ether, primiparas	21	1	7	13	62
Ethylene and ether, multiparas	41	5	17	19	46
Total, ethylene and ether	62	6	24	32	52
Total, all ethylene	258	13	74	171	66

The 30 per cent incidence of nausea or vomiting under ethylene alone is admittedly greater than is obtained with nitrous oxide-oxygen. In our experience, however, as in that of others, the nausea is of very short duration, and vomiting more than once is quite uncommon. The addition of ether increased the rate, as was to have been expected. The higher percentage among the multiparas of both groups may possibly be explained by the fact that, because of the shorter duration of the birth process, these patients are more likely to have a full stomach from a meal taken before the onset of labor, a circumstance that predisposes to vomiting under any general anesthetic.

Cabot and Davis [5] have reported only 2 per cent of nausea and vomiting among 500 surgical patients, but here efficient preoperative preparation had been given and undoubtedly was a factor in the low incidence. Obviously, obstetric patients cannot thus generally be prepared.

PROLONGATION OF LABOR

In order to compare the effects of nitrous oxide and ethylene on the duration of labor, the average length of the second stage in spontaneous deliveries has been calculated for the various groups, as shown in table 7.

TABLE 7.—*Average Duration of the Second Stage in Spontaneous Labors*

Anesthetic and Parity of Patients	No. of Cases	Average Time, Minutes
Ethylene alone, primiparas	188	112
Nitrous oxide alone, primiparas	25	103
Ethylene alone, multiparas	104	37
Nitrous oxide alone, multiparas	38	30
Ethylene and ether, primiparas	66	121
Nitrous oxide and ether, primiparas	83	125
Ethylene and ether, multiparas	66	37
Nitrous oxide and ether, multiparas	84	37

When averages are considered, it is apparent that there is no significant difference in the length of the second stage that can be attributed to either anesthetic or to any combination. Moreover, these values are practically those usually given for normal labor; namely, two hours for the second stage in primiparas, and from thirty to forty-five minutes in multiparas. It may, then, be safely said that there is no, or very little, tendency for these two anesthetic agents to prolong the second stage of labor.

Among 334 primiparas, the administration of gas was begun at or after full dilatation in 72 per cent of the cases, and somewhat earlier in 28 per cent. On only two occasions was it begun before half dilatation. On the other hand, less than half (43 per cent) of the multiparous patients were compelled to wait until dilatation was complete, and in many of these cases the gas was not started earlier because the patients were admitted only during the second stage. In twenty-six patients of this group (nearly 7 per cent), gas was started at or before half dilatation. Occasionally, the administration has had to be stopped because of its slowing effect on the pains, but this difficulty has been very rarely met when weak mixtures have been employed. Under such circumstances the gas may be stopped and the patient returned to her room, or she may be given pure air through the mask until the character of the pains improves. So long as the patients are not acquainted with what is being done, this expedient is sometimes successful.

There is, however, good reason to believe that any anesthetic tends to prolong the first stage of labor, except possibly in those instances in which the pains are unusually frequent and severe. We have experienced this difficulty with both anesthetics, while experimenting to determine for ourselves whether they could not be used as first stage analgesics. With ethylene, the use of the weak mixtures we are advocating frequently permits the employment of inhalation analgesia without any noticeable slowing of the process of dilatation. We have begun the administration of ethylene whenever the pains have become hard and frequent, without too much attention to the size of the external os. Most frequently, this point has been reached at full dilatation in primiparous women and after more than three-fourths dilatation in multiparas, but in both groups frequent exceptions have been made, as indicated in table 8.

TABLE 8.—*Size of Cervix When Gas Was Started*

Anesthetic	Fully Dilated	From 8 to 9 Cm.	From 6 to 7 Cm.	5 cm. or Less
Primiparas				
Ethylene alone	102	37	7	2
Ethylene and ether	63	30	8	0
Nitrous oxide alone	24	4	4	0
Nitrous oxide and ether	85	29	10	0
Total	334	97	29	2
Multiparas				
Ethylene alone	80	54	35	11
Ethylene and ether	26	21	21	6
Nitrous oxide alone	15	11	10	2
Nitrous oxide and ether	44	24	18	7
Total	165	110	84	26

BLOOD LOSS

Statements vary with regard to the effect of ethylene on the loss of blood during and after delivery. De Lee [6] says it is increased; in King's [3] opinion it is unchanged, although some of his colleagues insist that it is greater, while Heaney [3] finds that it is greater than after nitrous oxide but less than after ether. Nowhere are any statistical data available. We have made an attempt to measure the blood loss in each case by collecting as much as possible in a sterile basin during the third stage and adding to it in our calculations the estimated extra loss if any. In this way, we have been able to approximate the true extent of the bleeding with a fair degree of accuracy in table 9.

TABLE 9.—*Blood Loss at Delivery*

Anesthetic and Parity of Patients	No. of Cases	Average Blood Loss (Cc.)
Ethylene alone, primiparas	213	249
Nitrous oxide alone, primiparas	27	238
Ethylene alone, multiparas	192	294
Nitrous oxide alone, multiparas	40	273
Ethylene and ether, primiparas	106	342
Nitrous oxide and ether, primiparas	131	315
Ethylene and ether, multiparas	80	330
Nitrous oxide and ether, multiparas	95	280

There is little difference in the average amount of bleeding when either anesthetic is employed alone, but as soon as ether is added an increase is immediately apparent. When all multiparas are considered together, irrespective of the anesthetic employed, the bleeding averages 318 cc., as against 289 cc. for the primiparas.

TABLE 10.—*Incidence of Postpartum Hemorrhage (Six Hundred Cubic Centimeters or More Blood Loss)*

Anesthetic and Parity of Patients	No. of Cases	Postpartum Hemorrhage: No.	Postpartum Hemorrhage: Per Cent
Ethylene alone, primiparas	213	8	3.8
Nitrous oxide alone, primiparas	27	1	3.7
Ethylene alone, multiparas	192	27	13.9
Nitrous oxide alone, multiparas	40	3	7.5
Ethylene and ether, primiparas	106	14	13.2
Nitrous oxide and ether, primiparas	131	12	9.2
Ethylene and ether, multiparas	80	12	15.4
Nitrous oxide and ether, multiparas	95	16	16.8

If, as has been suggested by others, a blood loss of 600 cc. or more is looked on as pathologic and classified

5. Cabot, H., and Davis, L. B.: A Preliminary Report on the Value of Ethylene as a General Anesthetic Based on a Study of Five Hundred Cases, J. Michigan M. Soc. 23: 372-376 (Sept.) 1924.

6. De Lee, J. B., in discussion on Heaney (footnote 4).

as postpartum hemorrhage, an analysis of our data will give the results shown in table 10.

These figures likewise fail to favor especially either of the anesthetics under consideration, although there seems, in two of the groups, to be some slight support for the belief that ethylene predisposes to more bleeding than does nitrous oxide. The increase with the addition of ether is apparent as before.

The treatment of the third stage has always been expectant, and the uterus has not been manipulated until there has been evidence that the placenta has separated, when it has been expressed from the vagina or lower uterine segment. Pituitary extract has not been given regularly after delivery, but manual massage has been continued for an hour. The reported incidence of hemorrhage is at first sight rather alarming, as is so often the case when actual measured values are used as a criterion. No patient in the series died of hemorrhage, and only one transfusion was necessary. The largest individual blood loss was in a patient with adherent placenta requiring manual removal, in which the measured blood amounted to 1,800 cc. There was, in this case, no alarming general reaction and no evidence of shock, and at the time of discharge the patient was in excellent condition.

EXPLOSIONS

No explosions have occurred. The delivery rooms are situated in the basement and have tile floors laid in concrete directly on the ground. The various metal parts of the gas machine are connected by wires, and the whole apparatus is grounded through another wire to a cold water tap. No attempts have been made to ground the patient, the anesthetist or the operator.

SUMMARY AND CONCLUSIONS

1. Satisfactory obstetric analgesia can be obtained with weaker mixtures of ethylene than of nitrous oxide. From 25 to 50 per cent ethylene with air is usually sufficient until the presenting part distends the vulva, when higher concentrations become necessary.

2. Three fourths of all spontaneous deliveries have been conducted under ethylene alone and one fourth of all operative deliveries, whereas with nitrous oxide about one fourth of the spontaneous deliveries and only an occasional operative delivery were conducted without the addition of ether.

3. The incidence of fetal asphyxia was roughly twice as great under nitrous oxide as under ethylene. Patients who had morphine or pantopon during labor gave birth to twice as many asphyxiated children as did those who were given no such drugs, irrespective of the anesthetic employed.

4. Given as indicated here, ethylene cost only about two thirds as much per patient-hour as did nitrous oxide.

5. Nausea and vomiting occurred in 30 per cent of all patients who were given ethylene alone, and the addition of ether increased the incidence.

6. There was no noticeable prolongation of the second stage of labor when ethylene or nitrous oxide was employed. As first stage analgesics, neither gas is free from disadvantages, but, in spite of them, the administration of inhalation analgesia is not absolutely contraindicated late in the first stage, especially in multiparous women, in whom, in more than half the cases, gas has been given before full dilatation with no ill effect.

7. Ethylene produced no particular effect on the extent of postpartum bleeding, but the addition of ether to either agent considerably augmented the average bleeding and the incidence of postpartum hemorrhage. Multiparity itself was a factor in the production of excessive bleeding.

8. No explosions have been observed in approximately 600 ethylene anesthesias.

9. As an anesthetic for obstetric work, ethylene has many advantages over its nearest competitor, nitrous oxide, and should be used more extensively.

THE FEMALE SEX HORMONE

VI. DEMONSTRATION OF THE FEMALE SEX HORMONE IN THE HUMAN BLOOD: TECHNIC: CLINICAL APPLICABILITY *

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In three previous papers [1] we have shown, successively, that the female sex hormone can be extracted from the circulating blood of the sow; that it can be demonstrated in the circulation of the human female, beginning to appear from ten to fifteen days before the onset of menstruation in an amount increasing as the time of menstruation is approached, and that it then appears in the menstrual blood in considerable concentration, disappearing at the same time from the general circulation, and that a positive test can be utilized to determine the sex of malformed or pseudohermaphroditic females. Since these observations have been completed, we have discovered that the hormone can also be demonstrated in the circulating blood of gravid women as early as the sixth to eighth week of pregnancy.

We have now standardized our method sufficiently to feel justified in recommending its trial as a clinical test applicable for the following purposes:

(*a*) To determine the approximate time of ovulation in a given case. The time at which the hormone is first demonstrable in the circulating blood should correspond closely to the period at which the follicle reaches maturity.

(*b*) To determine early pregnancy, especially in doubtful cases. The test becomes positive by the sixth to the eighth week of gestation.[2] In a patient with nephritic edema, in whom bimanual examination proved inconclusive, we were able to diagnose the presence of gestation by means of the blood test. The sole sources of error to be considered are the rare condition of persistence of the corpus luteum, with amenorrhea, in the absence of impregnation, or a test taken immediately before a delayed menstruation does occur.

(*c*) To determine whether menorrhagia or metrorrhagia, in a given case, is due to an excess or deficiency

* From the pathologic laboratory and gynecologic service of Mount Sinai Hospital.

1. Frank, R. T.; Frank, M. L.; Gustavson, R. G., and Weyerts, W. W.: Demonstration of the Female Sex Hormone in the Circulating Blood, I, Preliminary Report, J. A. M. A. **85**: 510 (Aug. 15) 1925. Frank, R. T., and Goldberger, M. A.: The Female Sex Hormone, IV, Its Occurrence in the Circulating and Menstrual Blood of the Human Female, Preliminary Report, ibid. **86**: 1686 (May 29) 1926; The Female Sex Hormone, V, A New Method of Determining Sex in the Presence of Malformation of the Genital Organs, ibid. **87**: 554 (Aug. 21) 1926.

2. We are as yet unable to state whether a negative phase occurs between ovulation and the sixth week of pregnancy.

of circulating hormone. The blood should be obtained at the onset of a period of bleeding, as after uterine bleeding has persisted the general circulation may already be depleted of its hormone content.

(*d*) To determine the sex of persons with absence of parts of the genital tract (vagina, uterus) or pseudohermaphrodites. Here positive results alone are of value.

TECHNIC

Preparation of the Extract.—Thirty-five cubic centimeters of blood is taken from an arm or other convenient superficial vein. The blood is at once run into a large flat dish in which 60 cc. of pure 95 per cent ethyl alcohol has been poured. The contents are thoroughly stirred with a glass rod. The dish containing the blood is placed for twenty-four hours in a vacuum drier at room temperature in which a vacuum of from 18 to 20 inches is maintained. When fully dry, the coarse powder is rubbed up in a mortar. The powder is poured into an extracting funnel, and 50 cc. of ether is added. The mixture is thoroughly shaken for ten minutes, allowed to settle for ten minutes, and the supernatant ether extract poured off into a flat dish. To the residual sludge, 25 cc. of ether is again added, the shaking is resumed for five minutes, and the mixture is then allowed to settle for five minutes more. The supernatant ethereal extract is again poured off until a little of the red sediment begins to pour over. The combined ethereal extracts are evaporated under a hood, at room temperature, to dryness. Two cubic centimeters of sterile distilled water is added to the dry residue, the mixture being carefully triturated in a small sterile mortar until a good emulsion is obtained.

Biologic Test.—Castrated mice are required for the biologic test. The mice should be castrated at least two weeks before being used for the test, and vaginal spreads should be made by means of a capillary pipet according to the method first described by Stockard and Papanicolaou.[3]

On the day before using the mice, a control spread should be made, a drop of water put into the mouth of the pipet, this injected into the vagina of the mouse, and withdrawn and reinjected at least twice in order to obtain a good general specimen of the vaginal contents. The cloudy droplet is expelled from the pipet on a clean slide and spread out in a rather thick film, air dried, fixed over a Bunsen flame and stained for two seconds with thionin solution (1 per cent aqueous solution of thionin).

The negative spread required for a serviceable test should contain mainly leukocytes, with an occasional nucleated cell. Another corroborative spread should be taken on the day of injection. Mice whose spreads show a considerable number of epithelial cells cannot be used.

One third of the aqueous emulsion obtained by extraction of the patient's blood is injected subcutaneously along the back of the mouse at 9 a. m., the second third at noon, and the final portion at 4 p. m., different sites being selected and leakage from the puncture openings being avoided. The first reading (vaginal spread from the injected mouse) is taken in the afternoon of the next succeeding day. Subsequent readings are taken forty-eight hours after the first injection, and the final reading sixty hours after the first injection.

A positive smear, which signifies the presence of the female sex hormone in sufficient amount to be recognizable by our test (i. e., one mouse unit) consists of a great preponderance of nonnucleated squamous scales, possibly some nucleated vaginal epithelial cells, but no leukocytes (strong). If the spread contains no leukocytes but only nucleated epithelial cells, we consider it a weak reaction (weak).

As mice may regenerate functionating ovarian tissue from the peritoneal bursa surrounding the ovary, we make it a rule to follow up each mouse that gives a positive reading for at least ten days, making two vaginal spreads a day. Very rarely such a mouse will show recurrence of a spontaneous cyclic reaction, under which circumstances the positive reading previously made as the supposed result of the injection must be discarded. As yet our efforts to simplify the test further have not been crowned with success, but we are continuing our efforts in this direction.

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3. Stockard, C. R., and Papanicolaou, G. N.: The Existence of a Typical Oestrous Cycle in the Guinea-Pig, with a Study of Its Histological and Physiological Changes, Am. J. Anat. **22**: 225 (Sept.) 1917.

FADS AND FANCIES IN THE PRACTICE OF OTOLARYNGOLOGY*

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Every field of medicine has its fads which for longer or shorter periods occupy the imagination and satisfy the credulity of patient as well as physician. The field of otolaryngology seems to lend itself with peculiar readiness to propositions of this sort. One reason is that the clinical problems in this field are often complicated and therefore less readily understood, even by men restricting their practice to the specialty. It is not my purpose to trace the history of all the fads that have held sway in otolaryngology; I desire only to call attention to a few of the fads and fancies that today are still more or less in vogue in this special field.

Perhaps no more spectacular fad had occurred in the history of medicine than that relating to nasal reflex neuroses. Discussions of this subject began when Voltolini, in 1871, reported the cure of two cases of bronchial asthma following the removal of nasal polypi. This was followed by a flood of contributions on nasal reflex neuroses from which it appears that there were many who were ready to believe that scarcely any ailment existed that could not eventually be cured by treating the nose. These ailments were not restricted to conditions such as asthma which give rise to symptoms in the respiratory tract, but included such maladies as headaches, neuralgias of more distant parts, and cardiac, gastric and uterine disturbances, particularly dysmenorrhea. A fair example of the extent to which those advocates of nasal reflex neuroses were willing to go is found in a statement by Bosworth that he had "seen no single case of spasmodic asthma in which the source could not be traced to the existence of some disease in the nasal cavity." Failure to discover any palpable evidence of nasal disease, such as the presence of nasal polypi, to account for the symptoms was not permitted to detract from the proposition, for the advocates were quite willing to include under nasal disease anatomic variations such as the ordinary irregularities of the nasal septum, turgescence of the turbinal bodies

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and anything that facilitated actual contact between the septum and the structures along the outer wall of the nasal cavity. Even the absence of such almost universally found conditions as these was not permitted to interfere with the theory, for it was assumed that hypersensitive spots existed in the mucous membranes of the septum, as well as in the turbinal bodies in noses which otherwise were quite normal, from which such reflexes arose.

One can scarcely imagine a more unsatisfactory position for the rhinologist than this with the portal left wide for indiscriminate nasal surgery. Every one is, of course, familiar with the modicum of truth back of the proposition of nasal reflex neuroses as, for example, the relief of some cases of bronchial asthma by the exenteration of the hyperplastic ethmoid. Rhinology to this day is still suffering from those advocates of nasal reflex neuroses who put it up to the rhinologist to find something in the nose on which to operate for the cure of such conditions as headache, neuralgia and dysmenorrhea.

For several years the specialty of otolaryngology has suffered from the opprobrium of indiscriminate removal of the faucial tonsils, an operation undertaken apparently for almost every ailment, and often quite irrespective of whether there exists any palpable local evidence of tonsil disease. The indiscriminate removal of the tonsils is at the present time the outstanding fad in the practice of otolaryngology and, I suspect, constitutes the most flagrant abuse that exists today in the practice of medicine. Since emphasis was laid on the rôle which focal infection takes in the etiology of systemic disease, and with the recognition of the frequency with which the tonsils appear to constitute the primary focus, it has become almost exceptional in some sections of the country to meet an adult patient who has not had the tonsils removed. A careful inquiry too often brings out the fact that there was never any local or general trouble attributed to the tonsils, and the statement is elicited that the family physician had operated because he found the tonsils full of pus. As a matter of fact, the recognition of pus in the tonsils is of such rare occurrence that it is at once apparent that the cheesy concretions found universally in the tonsils, at least of adults, have been mistaken for pus. Every one is, I believe, ready to concede that the actual detection of pus in the tonsils means that they are a menace, and that their removal is advisable even when local or general symptoms may be absent, but there are probably few who would take the position that the mere presence of the ordinary cheesy concretions in the tonsil crypts constitutes a proper indication for tonsil removal.

Another much abused fad of long standing in the practice of otolaryngology has grown out of the recognition of a relation between certain forms of ear disease and pathologic conditions of the nasopharynx. The actual relation that exists can be stated in a few words. In the first place, acute infection of the middle ear is usually secondary to an acute nasopharyngitis, and in the second place, growths in the nasopharynx, such as the common enlargement of the pharyngeal tonsil or the development of a malignant tumor in the vault of the pharynx, have often as one of their prominent symptoms the production of tubal catarrh manifest by impaired ventilation of the middle ear and the accumulation of fluid in the tympanum. Such ear conditions are usually in the nature of temporary processes which rarely leave serious permanent impairment in the hearing. The tubotympanic disease so common in childhood is rarely prolonged as an active process into adult life, and although alterations such as thickening and retraction of the drum membrane may persist, it is in a relatively small number of these cases that tubal occlusion persists or any serious impairment of the hearing becomes permanent.

Such ear conditions are readily distinguishable from the permanent, adhesive process left as a residue from a protracted suppurative otitis media. There has been a widespread confusion regarding the cases of chronic progressive deafness which begin in early adult life and which are responsible for most cases of severe deafness that handicap so many people in middle life, and those more or less temporary tubotympanic processes so common in childhood. The two are, as a rule, quite distinct processes, and even when the chronic progressive deafness of adult life occurs in a person who has suffered some previous tubotympanic disease of childhood, as evidenced by palpable alterations on the drum membrane or an arrested pneumatization of the mastoid, the occurrence is more in the nature of a coincidence with probably no etiologic relationship.

This confusion of the more or less transient, usually remediable tubotympanic processes so common in childhood, with the chronic persisting processes resulting in progressive deafness which occur in adult life has been responsible for all sorts of tinkering operations in the nose for the relief of an ear trouble which experience has long shown to have nothing whatever to do with nasal conditions. Such operations include the correction of the ordinary anatomic variations observed universally in the nasal septum, cauterizing the posterior ends of the inferior turbinal bodies, or even resection of the middle and inferior turbinates, and with an enthusiast for ethmoid operations, partial or complete exenteration of the ethmoid labyrinth. I suspect that there exists no more common abuse in otolaryngology today than this fad for operating on the nose for the relief of the condition which we recognize as chronic progressive deafness of adults.

One of the substantial contributions in recent years in the field of otolaryngology has been the recognition of anatomic relations existing between the optic nerve and the sphenoid and posterior ethmoid, and the observation that optic neuritis may be the result of infection in these cells, and that improvement of the optic neuritis may follow drainage of an infected sinus. Starting from these observations, a great deal too much has been assumed in this relationship between sphenoethmoid conditions and optic neuritis, particularly when an improvement in the optic neuritis is observed to follow an operation on the sinuses but no palpable evidence of sinus disease is discoverable either before or after the operation. The argument has been advanced that in these cases the explanation of the improvement in the optic neuritis is that there existed some intangible, nonsecretory, undiagnosable sinus disease and that an operation on this condition is responsible for the improvement in the nerve condition. It would seem, however, quite apparent that an optic neuritis may develop, perhaps in the course of an acute rhinitis, even when there exists no sinus involvement the correction of which could be expected to influence the course of the nerve condition, exactly as we see facial paralysis following even the mildest type of acute catarrhal otitis media. Recovery from involvement of

the facial nerve in this situation is just as likely to occur if we leave the unoffending mastoid alone as when some unnecessary mastoid operation is carried out. It would seem just as logical to believe that an optic neuritis which follows in the wake of an acute rhinitis when there exists no palpable evidence of sinus disease, and which subsides after an operation on the posterior ethmoid or sphenoid, would have subsided just as promptly without operative intervention, and that the recovery actually takes place not as a result of the operation but in spite of it.

The idea seems to have gained adherence, particularly following this line of reasoning, that a sinus disease capable of producing an optic neuritis may exist which will completely elude the experienced rhinologist aided by properly made roentgenograms. I am of the opinion that a sinus disease capable of producing optic neuritis rarely exists when a properly trained rhinologist with a background of clinical experience sufficient to evaluate his observations will not be able to discover it.

I do not wish to leave the impression that I would advocate refraining from operative intervention in all cases of optic neuritis in which a diagnosis of infection in these sinuses cannot be clearly established. Our incomplete knowledge of these conditions would not warrant such a stand. I do feel, however, that when careful search fails to discover palpable evidence of sinus disease, an operation should be considered only in those cases in which the neuritis is serious and persistent, and in which the ophthalmologist feels that in spite of the negative data of the rhinologist an exploratory operation should be undertaken. I would not be too quick to conclude that when the operation failed to discover evidence of disease, any favorable outcome that might develop in the neuritis has been brought about because of the operation.

In more recent years, especially since the searching observations by Sluder, I have seen an increasing number of patients who have been subjected to more or less extensive operations on the nasal cavities, particularly on the sinuses, for the relief of headache, and in whom nothing is found that would indicate there has been any nasal disease, and, moreover, there has been no permanent improvement in the symptoms, and the neurologist affirms that the condition is that of typical migraine. It would seem that the clinical fact is often overlooked that whereas pain in the head may be a conspicuous symptom in some forms of sinus disease, headache occurs much more frequently when no sinus disease exists. I look on much of this surgery on the sinuses when the indications are symptoms and not physical observations as one of the outstanding fads in rhinology as it is practiced today.

Discussions of prevailing fads in rhinology should not overlook a modern fad for operating on the ethmoid, an operation undertaken for almost every local nose or throat symptom, as well as for every form of systemic infection supposed to be of focal origin, and carried out on patients in whom there exists no palpable evidence of an ethmoid disease. I suspect that one of the reasons for the development of this fad is the impression among general practitioners, at least, that the diagnosis of ethmoid disease presents unusually difficult problems. As a matter of fact, for any one who has undertaken a careful investigation of the structure of the ethmoid, it becomes clear that this is the most accessible of any of the nasal sinuses, and that drainage from infection in the ethmoid is least likely to be impaired. The ethmoid labyrinth is complicated only as regards anatomic variations in the development of its pneumatic spaces, and in spite of the fact that the roentgen ray is not able to give as definite data as for either the frontal or maxillary sinuses, the diagnosis of ethmoid disease is no more difficult than for any of the sinuses.

The ethmoid enthusiast who has the fad for opening the ethmoid does not stop for palpable evidence of ethmoid disease, or even for the presence of symptoms characteristic of ethmoid disease, such as those arising in association with the changes in hyperplastic ethmoiditis, but includes as definite indications for operations such things as headache, postnasal catarrh, every form of eye symptoms, supposed systemic infection, tinnitus aurium and nerve deafness, and proceeds to operate in spite of the absence of any local evidence of ethmoid disease.

The situation in otolaryngology has not been improved by the increasing tendency in recent years for general practitioners to undertake to do operative work in the nose and throat. Practitioners who have had no adequate training for making the necessary technical examinations, and who can have, therefore, no background in clinical experience for evaluating the data, can hardly hope to avoid doing a great deal of unnecessary operating. An obligation rests on those who are sponsors for the work in this special field to protect this work from abuse. The specialist in otolaryngology should protest against the teaching to undergraduate medical students and interns in our general hospitals the technic of operative work in the specialty. Such training should always be reserved for those who have devoted sufficient time to the study of the specialty to have acquired a proper appreciation of the indication for such operations; that is, for those who have undertaken seriously to prepare themselves for this special practice.

There is a psychology in the situation surrounding surgical work which often favors indiscriminate operating. The patient is, of course, desirous of having something done to relieve his symptoms, and the physician, too, who is advising the patient is also anxious that everything possible be done. It is always rather unsatisfactory to be told by the specialist to whom the case is referred that no local trouble exists the correction of which would be expected to alter the symptoms. The man who always has some tinkering operation to suggest for any and every local symptom is likely, for the time, at least, to enjoy a certain popularity simply because he always does something, even though that something brings no ultimate results. It matters little how foolish a proposition may be; one is always able to secure a following provided he possesses ordinary salesmanship. Witness such silly fads as roentgen-ray treatment of the pituitary, the "finger surgery" of the nasopharynx, and the bizarre treatments of the eustachian tube, all carried out for patients suffering from incurable deafness, the result of degenerative processes that could not possibly be altered by any form of treatment, either local or general. In every community of any considerable size, one is likely to encounter some one who has taken up the fad of tinkering operations in the nasal cavities, correcting the ordinary anatomic variations of the septum and opening the ethmoid for every local symptom of which the patient may complain, whether this be recurring head colds, ordinary postnasal catarrh, or tinnitus aurium.

It is not difficult to see why this type of faddist is always looked on by his own confrères as a pest, for his influence tends to the lowering of professional standards.

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SPINAL ANESTHESIA

A REVIEW OF MORE THAN SIX THOUSAND CASES IN THE LOS ANGELES GENERAL HOSPITAL, WITH ESPECIAL CONSIDERATION OF GENITO-URINARY OPERATIONS *

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Spinal anesthesia is a root anesthesia produced by the injection of some anesthetic agent into the subarachnoid space around the cord, exercising itself mainly on the intraspinal segment of the posterior roots in the region in which the injection is made.

Spinal anesthesia was introduced in 1889 by August Bier of Bonn, who used cocaine as his agent. Little headway was made until the discovery of stovaine in 1904, and from that time on spinal anesthesia has suffered in repute from the statements and writings of both its friends and its enemies. Its friends often exaggerate its advantages and minimize its dangers. In the beginning, cocaine used in this way proved highly dangerous—a natural expectation. Stovaine produces excellent anesthesia, but it is a rather toxic drug, and when first introduced into the United States for this purpose the fatalities were just sufficient to brand—not stovaine—but spinal anesthesia as a dangerous procedure. Those who use tropacocaine or procaine hydrochloride extensively and have displayed due regard to technic and moderate dosage have experienced excellent and satisfactory anesthetic results in certain selected cases with less of the element of danger than with any other method (except caudal, parasacral and field block), not only in bladder operations and suprapubic prostatectomies, but in a number of other operations. From the operator's point of view, spinal anesthesia is ideal, as it permits easy technic, slight risk, excellent muscular relaxation, abdominal quiet, ordinarily perfect analgesia, and nerve blocking which aids in preventing and minimizing shock. Pulmonary and renal complications are also much less frequent.

To say that spinal anesthesia is practically without danger (primarily more dangerous than ether) is nonsense; but to state that the sum of the primary and secondary dangers of spinal anesthesia for the average case of suprapubic prostatectomy is less than the sum of the primary and secondary dangers from ether administration in the same type of patient is a sensible statement based on many observations in various clinics. In operations for bladder tumors, diverticula and suprapubic prostatectomy, the toxic or chemical irritation of ether on the kidney and the respiratory tract (usually already injured in this type of case) and manifested postoperatively, is responsible for a considerably greater percentage of deaths in such cases than could ever occur with spinal anesthesia, properly administered with reasonable dosage and with proper safeguards. Furthermore, the patient can usually begin taking fluids, even in quantities, by mouth (nature's way of really getting fluids in quantity) much sooner than after ether. Fluids raise the blood pressure, relieve shock, combat the effects of hemorrhage, and are the means of supplying sugar to combat acidosis, as well as hastening the elimination of toxic products—those of acidosis, nitrogen waste, and bacterial poisons. Again, the patient who can drink does not suffer from thirst. However, while the incidence of vomiting, as well as persistent vomiting, is comparably less than with ether, the incidence is still high enough (and occasionally persistent). This is an occurrence sometimes impossible to avoid with any anesthetic and is a factor to be reckoned with.

Frequently its indications are not sufficiently circumscribed by the operator, or discrimination made as to its employment with individual patients after thorough examination and study of these patients. To resort to spinal anesthesia for the average abdominal operation, such as appendix, pus tubes or gallbladder, would be folly. To attempt to secure analgesia and insure a high incidence of reliability to perform these operations safely and satisfactorily to both patient and surgeon, when there is no contraindication to ether, nitrous oxide or ethylene, would ordinarily be assuming an undue risk. In an aged patient or one with a bad myocardium that one suspects is without reserve and would greatly weaken under the stress and the toxic effect of inhalation anesthesia, one might perform even so high an operation as one on the gallbladder or the kidney; but these are the exceptions. In late cases of intestinal obstruction and strangulated hernia, it is probably the anesthetic of choice, judging from the operative records of the Los Angeles General Hospital. In the average case (disregarding for the moment caudal, parasacral and field block) we believe, everything considered, that it is the best anesthesia to use for operations on hemorrhoids and anal fissures, for litholopaxy, external urethrotomy, urinary extravasation, suprapubic cystotomy, suprapubic prostatectomy, excision of vesical diverticula, and in difficult cystoscopies in patients with extreme bladder irritability, from various causes such as contracted bladder, tuberculosis, stone, diverticula or tumor.

The most serious objections to spinal anesthesia are: first and most important, the sudden drop in the blood pressure; severe depression in the cardiovascular and respiratory systems; nausea and vomiting during operation, and the headaches that may follow the anesthesia. The fright and mental attitude in an extremely nervous and apprehensive patient are not ordinarily of great consequence, as most patients, once having had spinal anesthesia, refuse any other anesthetic if they have a subsequent operation. It may be, however, an important factor, and hence discrimination and sound judgment are required properly to select one's cases. A temporary paralysis of the sphincter occurs in a small percentage of cases.

In a review of more than 6,000 operations under spinal anesthesia in the Los Angeles General Hospital, there have been six deaths; three of these would have undoubtedly occurred within a few hours with any anesthetic, and two were the result of an overdose.

The first death occurred in a man, aged 35, with advanced pulmonary tuberculosis. He was operated on for acute urinary retention. The second death was that of a woman, aged 45. In an accident she had

* Read before the Section on Urology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

sustained fractures of both femurs, the pelvis and several ribs. She was a diabetic patient and had chronic nephritis. Anesthesia was done with the patient slightly turned on her side in bed. The blood pressure was low, but she was apparently in fair condition until transferred from her bed to the Hawley table. She then suffered collapse almost at once. The third death was that of a woman, aged 84, with a strangulated femoral hernia of six days' duration and fecal vomiting for forty-eight hours. She had been given one-fourth grain (16 mg.) of morphine by an outside physician, and on arriving in our operating room some two hours later, the pulse was 140 and the respiration 6. The surgeon said she would die if not relieved at once and chose spinal anesthesia. She died fifty-five minutes later. The fourth patient to die was a man, aged 76, suffering from a strangulated inguinal hernia, who had developed fecal vomiting seventy-two hours prior to his entrance; he had not vomited during five hours preceding operation. The anesthetic was given with the patient sitting; almost instantly he began vomiting. The vomiting was of a projectile type, and almost 8 liters of vomitus was caught in a basin. He then became unconscious and could not be aroused; the pulse and respiration ceased three hours later.

The other two deaths were caused through some one's error by an overdose of procaine hydrochloride, each patient receiving 9½ grains (0.6 Gm.). Both these patients had low blood pressure at the beginning and failed to show the usual sharp fall. They were placed in the Trendelenburg position and were conversing with their anesthetists. When they were brought back to a level position, the pulse and respiration both instantly ceased. One patient made a slight temporary response to stimulants and artifical respiration, but no response was obtained from the other.

Some of the patients have fainted or lost consciousness during the first twenty minutes after the administration of spinal anesthesia. Many patients vomit during the operation. Lastly, there are the headaches. One patient had numbness of the feet which persisted for two days, with severe headache and neck pain of three days' duration. This patient was unable to move the eyeballs without causing intense pain.

When some one tells us that he can state with reasonable certainty, that is to say, within from two to five minutes, just how long the anesthesia in a given case will last and just how high the anesthesia will extend, the credulity of the listener is strained. Uncertainty is a drawback; but a very small amount of ether or nitrous oxide will suffice to make the anesthesia perfect. When any one states that he never or seldom is anxious or afraid that the patient will die on the table—exhibiting low blood pressure, pallor and feeble pulse—he is either ignorant or indifferent, or he does not reach the superlative in his worship of abstract scientific truth. But one soon gets over this. To say that headaches do not follow is another unfounded statement. They do follow in a certain percentage of instances, but are seldom of much moment if certain common sense principles are insisted on. If a patient with a major operation—say, suprapubic prostatectomy—is kept in the recumbent position (as he should be for several other more important major reasons, such as heart, drainage and tenesmus), severe or protracted headaches are really quite unusual. On the other hand, if spinal anesthesia is produced for a minor procedure, such as a difficult cystoscopy in a highly irritable and contracted bladder with tuberculosis or tumor, and the patient is allowed to be up in one or two days, then headaches frequently occur just as they do following simple lumbar puncture for diagnostic purposes. The patient should be kept in bed for at least two days following a first lumbar puncture for any purpose whatever, and three days is desirable if practicable; then the percentage of headaches will take a surprising drop.

The cases reviewed in this series are: urologic, 1,045; rectal, 3,480; hernias, 595; varicose veins, 122; gynecologic, more than 400; orthopedic, 396, and miscellaneous general surgery, including stomach resections and operations on the gallbladder, 150.

PREPARATION

Extremely nervous patients are apt to be poor subjects for spinal anesthesia, unless they have had a preliminary opiate to allay their apprehensions—a desirable thing preceding any anesthetic if not contraindicated. If an operation is likely to be time consuming, a preliminary opiate (morphine and atropine) is almost indispensable, since the patient does not get so restless as he otherwise would. Unless the operation is to be an abdominal one, the patient arrives at the operating room in better condition if he has had some orange juice and black coffee with sugar early in the morning. In the urologic service, water (and often orange juice) is ordered right up to the time of the patient's starting for the operating room. No drink is given that has an appreciable insoluble residue.

TECHNIC

After the preliminary wheal in the skin has been made, the muscles and fascia are infiltrated clear through to the dura with a long needle. This is important. For the puncture a small, fairly sharp nickel or nickeloid needle is used. Platinum and gold needles are far from satisfactory. The Quincke needle is awkward for the reason that the nozzle of the Luer syringe is sometimes too short to prevent leakage of fluid. The puncture should be made in the midline; otherwise, small nerve branches may be traumatized and cause postoperative pains on one side for a considerable time.

If in doubt about the dosage indicated, it is better to err on the side of too little rather than chance a maximum dose; it is easy to supplement the anesthetic with nitrous oxide or ether, and the combination is practically always satisfactory both from the standpoint of good anesthesia and in maintaining an adequate blood pressure and good circulatory condition generally. The surgeon should not exceed a dosage of 1½ or 2 grains (0.10 or 0.13 Gm.) of procaine hydrochloride or tropacocaine and should almost never use stovaine. For high anesthesias, i. e., high puncture, increased dose, withdrawal of fluid and reinjection, we have had little experience, since the few we have tried gave us an extreme scare; the arms became numb, respiration almost ceased, and generally the patients appeared about to expire. After rapid lumbar puncture and withdrawal of fluid, followed by the injection of salt solution, they all came out of it.

Some physicians prefer spinal fluid as a solvent for the anesthetic agent. One of us (H. W. M.) prefers distilled water for the following reasons: In order to dissolve tropacocaine or procaine hydrochloride quickly and completely, the solvent must be hot and considerable agitating force must be used. Therefore, 3 cc. of hot distilled water is drawn up through say a 20 gage needle about 2½ inches long attached to a Luer or other syringe; the needle is inserted in the bottom of the

opened ampule containing the crystals of procaine hydrochloride or tropacocaine and the hot distilled water is ejected with considerable force. By repeating this procedure a few times, one will obtain a clear solution in clear glass. Hence, one knows the solution has been complete and the dose accurate. On many occasions, in watching the induction of spinal anesthesia, one of us (H. W. M.) has observed that the crystals are only partially dissolved, and consequently an indeterminate amount of the drug is injected—seldom the complete dose. By the time the lumbar puncture has been completed, the solution in the syringe has entirely cooled. In this way the patient is spared the necessity of assuming a really trying posture or position with the needle in place, while some one tediously dissolves (or fails to dissolve) a substance that is slowly and with difficulty soluble in a small amount of fluid at 99 F. Day has used this method for many years with no demonstrable harm. A previously prepared stock solution in a sealed ampule or other container should not be used—only a freshly prepared solution. Should there be a marked fall in blood pressure, the table is put in slight Trendelenburg position. It is probable that after ten minutes more than 90 per cent of the drug has been absorbed and hence in actual practice, placing a patient in an extreme tilted position, such as Young uses for perineal prostatectomy, does no harm.

The anesthetist should closely observe the color, pulse and respiration, and record blood pressure readings at intervals, depending on the general appearance or condition of the patient. The anesthetist should not consider his full duty performed after the drug has been injected and the patient seems insensible to operative pain. He should "stand by" and watch the patient carefully. For nausea, oxygen inhalations or pituitary extract hypodermically, which at the same time help to raise the blood pressure, are given. Marked hypotension is relieved by lowering the head, by a few breaths of nitrous oxide, or by pituitary extract or epinephrine given hypodermically.

Intravenous solutions are likely to cause acute dilatation of the right side of the heart. Any drug acting through centers or nerve roots is blocked. Hence, to be of value they must act on the sympathetic ganglions, the vasoconstrictor fibers, or directly on the vascular system. Inhaling of ammonia, ether or nitrous oxide has a temporary stimulating effect. Epinephrine administered subcutaneously acts slowly but intensely, although lasting only fifteen or twenty minutes. Pituitary extract does not act as strongly as epinephrine, but its effects are more lasting. Caffeine is of doubtful value. Fortunately, extreme hypotension rarely lasts more than twenty-five minutes and comes on within the first twenty minutes after the anesthetic has been administered. Here the Trendelenburg position is invaluable. The administration of oxygen also aids in warding off the hypotension and the nausea which accompanies it, in many cases seemingly caused by cerebral anemia.

Headaches are best relieved by lowering the head, sedatives and ice caps. In a few cases of severe headache, intravenous saline solution has been given with fairly good results. We have not tried intravenous distilled water, as some advocate.

In the Los Angeles General Hospital the patients in the urologic ward have their black coffee and all the water they wish to drink just before going to the operating room. Those in the general surgery wards have routine surgical preparation and no fluids by mouth the morning they are to be operated on, and they are the ones showing dull frontal headaches. Headaches are also seen in those patients in whom an appreciable amount of spinal fluid is lost, and when a needle of large caliber is used.

To compare the advantages and drawbacks of this method with caudal plus parasacral and field block, for suprapubic operations: Paravertebral and field block is unquestionably preferable from many standpoints. Blood pressure readings taken at frequent intervals show that during anesthesia and operation the readings are commonly free from the tremendous drops so often seen with spinal anesthesia. This drop with spinal anesthesia may, and very likely does, lessen the patient's postoperative resistance to a slight degree, and may become immediately dangerous. Hence, from the major standpoint and based on observations by numerous men, it is safer. Its disadvantages are that it requires skill and much practice to be dependably efficient in a reasonable percentage of cases. At present, these skilled specialists are extremely few, and there are many objections and disadvantages to the surgeon himself having to develop this technic and carry on as the anesthetist himself, since it may so take up his energy and attention that concentration on other conditions of the patient suffers. Again, so much procaine hydrochloride is sometimes used—always many times more than is needed or justifiable for spinal anesthesia—that the patient occasionally manifests toxic symptoms from the absorption of the drug. Furthermore, being complicated and time consuming, it may upset the high strung, sensitive and apprehensive patient unduly in its administration. When practicable and expertly administered, it should be given precedence over spinal anesthesia in most cases.

CONCLUSIONS

1. The fall in blood pressure is greater than with any other anesthetic; hence, spinal anesthesia should not be used in patients with great circulatory hypotension or in those with myocardial degeneration or anemia.
2. Its safety and desirability is increased by being supplemented with a light gas-oxygen anesthesia.
3. Central acting drugs are valueless. Only drugs with a peripheral pressor action are of value.
4. Blood pressure readings should be taken frequently.
5. The morning cup of black coffee with sugar, or orange juice, is beneficial.
6. Patients, as a rule, should have a preliminary opiate.
7. Needles should be of small caliber and of nickel or nickeloid.
8. Loss of spinal fluid should be guarded against as far as is practicable.
9. If used in selected cases and carefully supervised, the mortality with spinal anesthesia should be less than 1 in 1,000. If it were even 1 in 100, it would still be a desirable anesthetic in selected cases because the postoperative mortality directly attributable to inhalation anesthesia in many prostatics is considerably greater.
10. Spinal anesthesia is most valuable and efficient for operations below the diaphragm when complete muscular relaxation is sought, but is a form of anesthesia to be used with discrimination and for special reasons.

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RESECTION OF OBSTRUCTIONS AT THE VESICAL ORIFICE

NEW INSTRUMENTS AND A NEW METHOD*

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In approaching the subject of minor surgery of obstructions at the vesical outlet, one is reminded of the accomplishments of Bottini, Young and Caulk, who have been the ones most instrumental in demonstrating the fact that the so-called hypertrophied prostate gland can be influenced to retrogress in size and even resume normal proportions. We have all observed the marked shrinkage in large prostates which so regularly occurs in the interval of a two step prostatectomy, and it is an interesting fact, to which Caulk has already drawn attention, that this phenomenon regularly follows resection of the intruding lobes or contracted sphincter. It is obvious that the phenomenon could not occur so consistently were the prostatic lobes the seat of a true

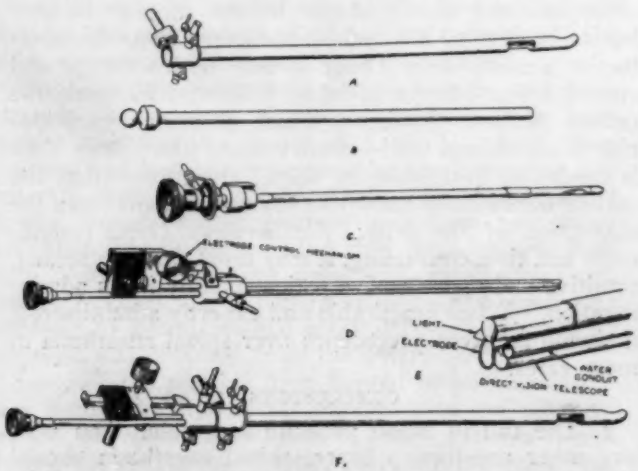


Fig. 1.—*A*, *B*, sheath and obturator; *C*, examining telescope; *D*, working parts, consisting of direct vision telescope, water conduit, light carrier and cutting loop; *E*, end of working parts enlarged; *F*, instrument assembled, with electrode or loop in fenestra moving toward its distal end.

hypertrophy. The fact that this change does occur forms the basis on which rests the rationale of minor surgery of the prostate gland.

Though this paper is intended only as a clinical presentation of prostatic resection and a new method for its excution, it is relevant here to state that ample pathologic work has been done by Ciechanowski, Greene, Brooks, Tannenbaum, Fisher, Ewing and others in support of the theory that prostatic enlargement is for the most part an inflammatory one. In any given case it is difficult to state whether the inflammation from whatever cause is the original etiologic factor in the enlargement or a result of infection from residual urine due to sphincteric contracture or pressure from intruding fibrotic lobes; but it is certain that the relief of these conditions by resection results in the abatement of the inflammatory reaction and the diminution in size of the organ.

The mere removal of sections from either the enlarged lobes or the contracted sphincter would not seem logical were it not for the fact that they so readily lose their succulence and resume the much reduced size and solid consistency of the noninflammatory state. In this state the actual degree of instrusion can be accurately estimated and further dealt with if necessary with the view of obtaining a sufficiently enlarged outlet to make secure its permanence.

With the method that I am about to describe any desired number of sections can be removed at a single sitting from either the lateral or the middle lobes or from the sphincter, under the guidance of the eye and without causing bleeding.

It has been possible to reduce the problem to a mere cystoscopic procedure by the evolution of a cutting current capable of operating in a water medium, and a cystoscopic instrument for its application. This instrument is provided with a small movable ring or loop of tungsten wire which, when actuated by a suitable current, is capable of removing longitudinal spaghetti-like sections of tissue. The former of these instruments I have named the resectotherm and the latter the resectoscope.

For a better understanding of the action of the current and the way in which it is employed, I will first describe the resectoscope (fig. 1).

This is essentially a cystoscopic instrument provided with two lense systems or telescopes. One is of the indirect vision type for examination and diagnosis to be employed before operating, and the other is of the direct vision type, to be employed while operating, in order that a perspective view may be obtained of the entire prostatic urethra during operation.

The instrument is about 2 inches (5 cm.) longer than ordinary cystoscopes for application in advanced prostatism and is made in size 27 F., though smaller sizes can be made without difficulty. It comprises a sheath with its obturator and examining telescope, as stated before, in addition to the working parts, which are asssembled in a compact bundle made up of the direct vision telescope, a light carrier, a water conduit, and a cutting loop or active electrode. The latter is of especial interest as the actual operating element of the instrument and will therefore require a fuller description. It is, however, first necessary to mention the fact that the sheath carries a receptacle for the indifferent pole of the cutting current. It is thus made evident that the instrument is bipolar, no plate or pad being used under the buttocks as the indifferent pole.

The cutting loop consists of a small ring of tungsten wire about 0.5 cm. or less in diameter, placed at right angles on the end of a peculiarly insulated shaft, and connected at the working end of the instrument in such a manner as to slide backward and forward in the fenestra. Although this may be accomplished in a number of ways, I have found it preferable to employ a manually controlled gear mechanism insuring even movement and perfect control. It is this part which carries the active pole of the cutting current, the indifferent pole, as stated above, being connected with the sheath.

The tungsten loop (figs. 2 and 3) is situated just in front of the eye of the telescope and can be seen resting against the protruding tissue in the fenestra just before its backward thrust begins, and is visible throughout its entire excursion to the distal end of the fenestra. The size of the loop decided on, though seemingly rather small, was found ample because of the fact that the size of the gutter which it makes is larger than one would expect. This is due to the fact that it is larger than the outside circumference of the loop and that it is probably increased by dehydration of the tissue to some extent.

* Read before the Section on Urology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

The resectotherm is an apparatus which delivers a radio frequency current of low voltage and is peculiar, as already stated, in that it can be delivered in a continuous flow through the cutting loop under water, and this, by virtue of the fact that it does not arc or jump aross a gap, makes possible the employment of a bipolar instrument. There is no tendency to sparking, and accordingly all fulguration effects resulting in slough and secondary hemorrhage are eliminated.

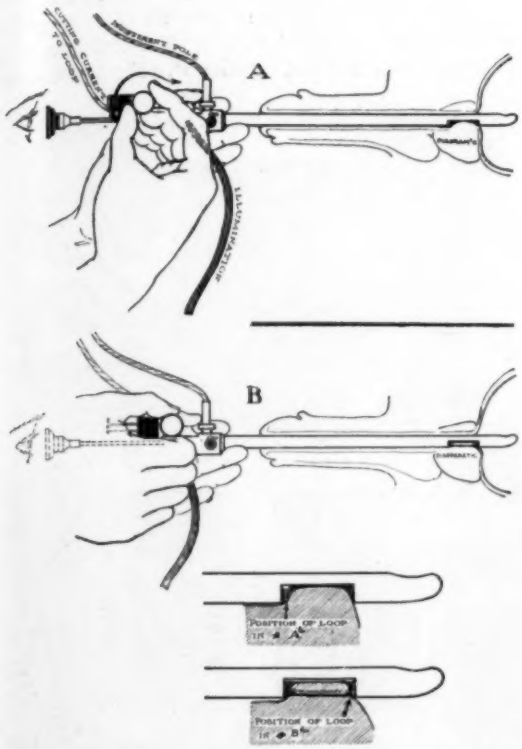


Fig. 2.—Instrument in operation: *A* and *A'*, loop seen in proximal end of fenestra ready for cutting thrust through tissue; *B* and *B'*, loop at distal end of fenestra after cutting thrust.

Though there is considerable difference of opinion as to the exact way in which the current performs its function, it appears to be due to molecular disintegration or eruption of the cells. This is evidenced by the fact that when the current is turned on its action is observed in approximately five seconds by the formation of a luminescent ring or halo, which causes eruption of the cells in its path as the loop is advanced, leaving no carbonized tissue either on the loop or on the cut surface of the gutter.

TECHNIC

After the instrument has been inserted and a thorough examination with the indirect vision telescope has been made, it is replaced by the working parts containing the direct vision telescope.

The part to be resected is then caused to engage in the fenestra, which is seen as it bulges rather suddenly into the field and can be felt as a distinct resistance or "hang" to backward or forward motion of the instrument.

The cutting loop is in position just in front of the eye of the telescope and rests against the engaged tissue. The current is then turned on either with a foot switch or by an assistant. When the halo and bubbling ensue, the loop is advanced until it has traversed the full length of the fenestra (three-fourths inch) through the tissue contained therein, leaving a clean cut gutter showing only a slight discoloration of its surface.

In bars and contractures a sufficient number of parallel sections are taken from the floor of the sphincter to remove completely the obstruction in its entire breadth at this point. When, however, much lateral lobe encroachment on the lumen of the posterior urethra exists, the sections must be longer than three-fourths inch, and it therefore becomes necessary to remove them in a continuous line. This is easily accomplished by beginning at the most distal point of the projecting mass and removing sections in a line as the instrument is withdrawn. Several such lines may be made parallel when the indication exists.

Practice in controlling the speed of the cutting thrust should be obtained on pieces of tough meat in a bowl of water. Experience thus obtained is of extreme importance, as it is undesirable to cut so slowly as to permit of desiccation which might result in possible slough and secondary hemorrhage.

Under this heading it might be well to consider briefly the preoperative preparation, after-care and anesthesia.

The first of these considerations is the most important, as much of the inflammatory enlargement and sensitiveness of the patient can be reduced by several days of urethral drainage with an indwelling catheter, although all methods directed to this end should be employed.

As to the value of the indwelling catheter after operation, there is much difference of opinion. In general,

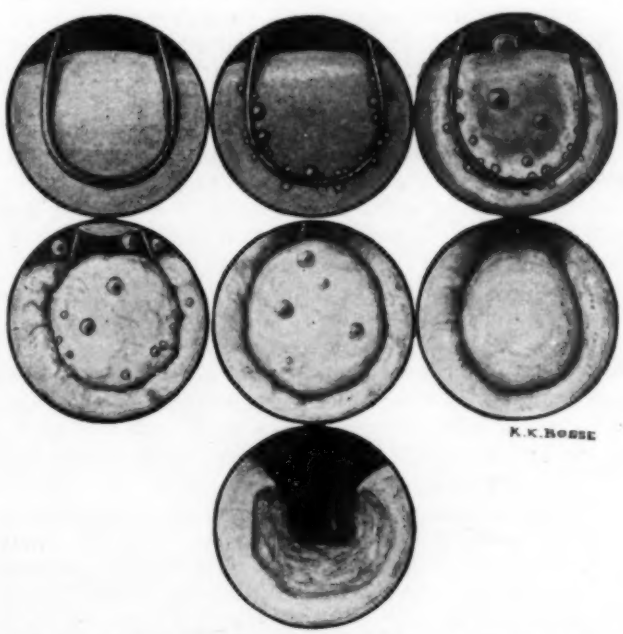


Fig. 3.—Cutting loop as seen through instrument in various stages of operation resulting in gutter formation.

I would not recommend it, but in cases in which it was well borne before operation it might safely be employed after. Just as in the treatment of these cases before prostatectomy, the matter of treatment must vary with the patient and the indications to be met.

The method of inducing anesthesia will also vary with the patient and the condition present, in that the simple instillation of procaine hydrochloride solution into the urethra and bladder will frequently suffice; but in inflammatory cases accompanied with much irritability, caudal anesthesia has been found ideal.

RESULTS

Though none of my patients were operated on later than six months ago, the cystoscopic pictures alone are sufficiently convincing that recurrence is highly improbable. We are also assured by those who have worked with the punch that results are permanent, and the patients operated on five or six years ago have remained well. In all my patients, examinations were done two or three weeks after operation; and though drawings were made at the first examination, it was hard to believe in many instances that they were the same patients (figs. 4, 5 and 6).

Conspicuous changes were regularly noted in the contour of the sphincter with reduction of its elevation in its entire circumference. In the lobes, the convex surfaces which met in the midline of the posterior urethra were retracted, showing grooves where sections had been removed, forming a roomy vesical outlet. With this change in contour, the glandular or soft consistency of the tissues is replaced by the normal dense sclerotic tissue logical to the underlying pathologic changes of the disease. The depressions where tissue was removed are clearly visible, but show no altered color or evidences of cicatrization. With regard to slough formation this is rarely seen, and usually is only of a light superficial furry texture lasting about a week. If, however, the cutting thrust is made slowly, there would naturally be more slough formation with the possibility of secondary hemorrhage. This has occurred twice in my group of cases as a direct consequence of faulty technic, which was commented on on both occasions at the time of operation. In both these cases the tissues were densely sclerotic, and the adjustment of the current output was not sufficiently great for rapid cutting. This has been altered and should not recur.

As for the clinical results, I can agree with others working in this field that they exceed all expectations even in cases which were regarded as frankly surgical. As my group of cases includes only forty-six, I will not attempt to establish any statistical records as to the possibilities in the various types treated.

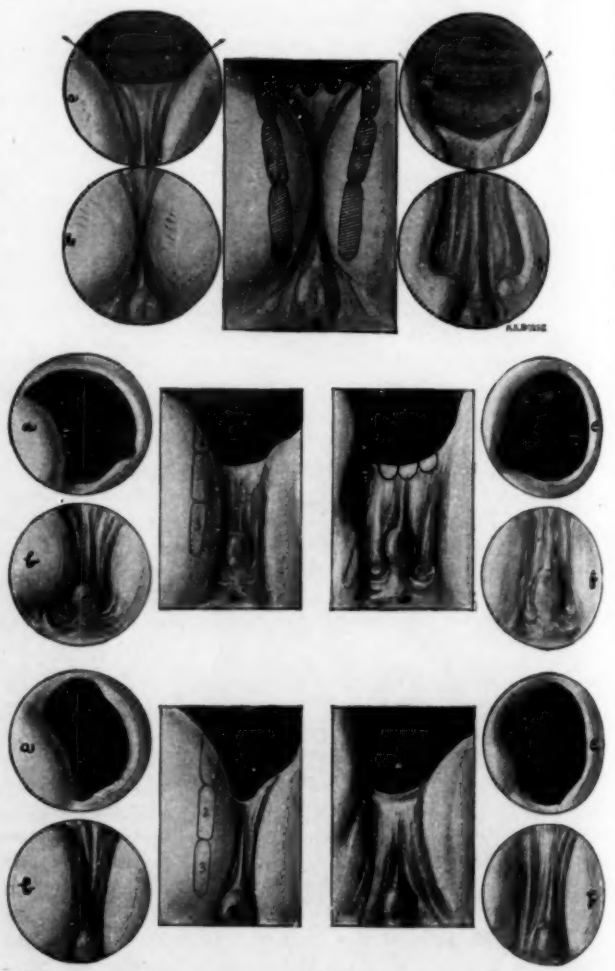
In general, however, I can state that all my patients had lobe intrusions to a greater or lesser degree, they were all old men except one, and the results were uniformly good. These patients were not selected as having obstructions especially amenable to resection, but were taken in the order in which they presented themselves, to secure knowledge as to the possible limitations of the resection operation.

The symptoms were in proportion to the degree of prostatic enlargement and acuteness of the inflammation. In general, these were dysuria, frequency, retention, and overflow dribbling with residual urine varying from 3 to 40 ounces (90 to 1,180 cc.).

Though these were my first patients, there was not a single instance in which bleeding of any importance or reaction of any sort occurred, though several sections were removed in every instance. The amelioration of symptoms was striking in several cases with a single treatment, and though a second treatment was necessary in four cases, there were none requiring a third.

Specifically, the symptoms yielded as follows: Frequency of micturition and residual urine, two symptoms which seemed to recede coincidentally, were reduced on an average of 50 per cent in the first week and all cases were improved in the course of four weeks, so that none retained more than 2 ounces (60 cc.). In some of the most severe cases from a clinical point of view, these being the ones in which a second treatment was necessary, the results were most striking in that after an interval of a few weeks, complete emptying was noted.

In three cases of complete retention, voluntary micturition occurred from two to six days after operation. Overflow dribbling was arrested immediately after treatment in the two patients suffering with this complaint. All of the forty-six patients were made comfortable, and, among those who should have had a second treatment, several refused on the ground that they felt well and did not require it. As space does not permit of detailed case histories, reference to the illustrations will explain these results.



Figs. 4 to 6.—Drawings of actual conditions before and after operation; *a* and *b*, condition at sphincter and posterior urethra, respectively; *c*, composite picture of conditions before operation, with sections to be removed indicated by dotted lines; *d*, composite picture of condition from two to four weeks later with dotted lines in some instances indicating further resection; *e*, *f*, pictures of condition at this time in sphincter and posterior urethra. The increased lumen of the vesical outlet and marked retraction of the lobe intrusion, especially at the site from which sections were removed, may be noted.

CONCLUSIONS

From the foregoing it is logical to state that prostatic resection is applicable to a large number of cases of prostatic hypertrophy commonly subjected to prostatectomy.

With the evidence at hand, it is not too much to assume that permanent results can thus be obtained.

The tendency of the inflamed prostate to recede in size under resection would suggest in resistant cases

the probability of malignant growths or deep seated infection.

In obstructive carcinoma, resection is surely more logical than cystotomy for the maintenance of drainage. In so-called bars or contractures, nothing more radical can be justified. In the early stages of prostatic disease it should meet its greatest field of application, as at this time minor surgery should arrest the disease and prevent advanced prostatism.

Thus, it appears that a minor surgical procedure so safe and easy of performance and containing so much of promise should be regarded as an advantage and should invite a more general use that it may find its logical place in surgery.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MARTIN AND ARBUTHNOT, AND STERN

DR. ROBERT V. DAY, Los Angeles: I have been greatly interested in this instrument conceived by Dr. Stern and perfected by Mr. Wappler. Since the days of Mercier many have attempted to devise instruments and procedures for the relief of prostatism as the result of bars or contractures at the bladder neck. None are uniformly successful, and all have certain technical operative defects or postoperative disadvantages and dangers. The most successful have been that of Young, and Caulk's modification. Recently, Tolson supplemented Young's original procedure in that he uses a special high frequency electrode through Young's sheath, following the punching out, to accomplish just sufficient cauterization to control hemostasis. Having tried practically every procedure suggested, I am inclined to favor Tolson's method because the tissue removal is clean cut and the hemostasis is well nigh ideal, with less thermic injury than with any other procedure. It is also the simplest and most rapid of any of the hemostatic modifications. I can see that this instrument of Dr. Stern's might be of unusual value, since it goes without saying that a better view can be obtained by employing water dilation than through any modified Young's punch or any other instrument lacking the dilation. How much tissue it will take out, I do not know; but Dr. Stern says that the procedure can be repeated any number of times under actual vision at the same sitting. I am looking forward to seeing some good results with this instrument, if in actual practice it does not prove too fragile and delicate, and if it can ultimately be obtained at not too great an expense. I am hopeful that, moreover, it will prove a great improvement on any method at present at our command for removing tiny polypoid masses resulting from hyperplasia at the margin of the bladder neck and in the urethra just external to it. Dr. Stern and Mr. Wappler are to be commended for giving us this instrument; with more experience and perhaps some modifications I trust that we may look forward to doing our work a little more accurately under direct vision with water dilation. I wish to endorse all that Dr. Martin has said. I have made use of spinal anesthesia for twenty years, and it has proved highly satisfactory when wisely chosen.

DR. A. C. GILBERT, Dallas, Texas: Dr. Stern has contributed a wonderful instrument to the armamentarium of the urologist. Contractures, bars and small hypertrophies probably constitute 20 per cent or more of the obstructions at the bladder neck. My operative experience with these has been limited to the original punch of Dr. Young, and the cautery punch of Dr. Caulk, the latter giving better results than the former. But an instrument that permits the performance of this operation under vision deserves great credit. I believe that I would get much more comfort from doing an operation under vision than under the technic of either Dr. Young or Dr. Caulk. If it will do all that its designer anticipates, it seems that it may revolutionize prostatic surgery; but I doubt whether it will ever be applicable to large adenomas. If we could relieve most of the symptoms, we would do a great deal. We know that many of these large adenomas are undergoing carcinomatous degeneration; but in bad operation risks, even with the large adenomas, this instrument would certainly seem to be the proper thing to use. Relative to spinal anesthesia, Dr. Martin has presented my views almost entirely. Operations below the umbilicus I prefer to do under sacral anesthesia, because with this type of anesthesia I have had very few bad reactions. In doing operations on the bladder, such as resections of the bladder or an open operation for prostatic obstruction, spinal anesthesia seems to be the anesthetic of choice, because the relaxation of muscles, which is so important in this type of operation, is almost ideal under spinal anesthesia. The trouble with this anesthetic, as I see it, is the terrific reaction some of these patients suffer. I believe that this can be prevented to a certain extent by preventing the drug from diffusing above the level of the lumbar cord. This can be done by using 2 or 3 cc., injecting slowly, and keeping the patient's head and thorax elevated. If within from twenty to thirty minutes symptoms of shock do not develop, I think one is fairly safe in using the Trendelenburg position. If such symptoms develop within from five to ten minutes after administering the anesthetic, there is an extra hazard in using the Trendelenburg position.

DR. W. WAYNE BABCOCK, Philadelphia: Spinal anesthesia is a very personal anesthesia, and the results and dangers often depend more on the user than on the drug. For example, in using the so-called dangerous stovaine almost daily for the last twelve years, we have had no death under the anesthetic except one, in which a large injection of distilled water was given intravenously in mistake for salt solution. Before 1914, I had ten deaths. It is not that stovaine is safer now than then; it is that I have become safer. Formerly, we selected for spinal anesthesia moribound patients, patients in a condition of shock or with advanced toxemia, or patients with asthenia, great obesity, myocardial degeneration or pleural effusion; these patients should not be given spinal but rather local anesthesia. For the average operation on the bladder, ureter or kidney, especially if there is an associated high pressure, spinal anesthesia acts well. I have seen no catastrophe from spinal anesthesia in urologic surgery. Even children and adults with marked general anasarca whose kidneys we formerly decapsulated had the intradural injection without harm. In urologic operations, anesthesia below the second lumbar roots (below the white rami) usually suffices. Thus we can work without a dangerous fall in blood pressure. We do this by injecting a solution, made light by adding alcohol, into the second, third or fourth lumbar interspace, and by maintaining a Trendelenburg position. The specific gravity, dilution, bulk of anesthesia solution, the force and speed of injection, and the position of the patient are important, but often ignored, points. For operation on the kidney or gallbladder, we inject the drug in the eleventh or twelfth dorsal interspace and contend against a sharp fall in blood pressure. Against this fall, pituitary extract, strychnine, atropine or digitalis are useless. Epinephrine is very effective, but for quick action it must be given intravenously before the heart stops beating. The blood pressure is constantly watched in spinal anesthesia, and if the systolic pressure goes down to 30, a needle is at once put into a vein, and the heart action maintained without overstimulation. If respirations cease, the old mouth to mouth insufflation may be life saving. Spinal anesthesia should not produce headaches more frequently than a simple spinal puncture. If more headaches are resulting than from ether, there is something wrong with the solution, or too large a needle is being used. Persistent vomiting after the operation is not due to the spinal anesthetic. With a technic as it should be, the danger, headaches, vomiting and secondary operative discomfort are less; and the secondary disturbances of the sphincters are no greater than with ether. A bungling technic, an irritating solution, or the injection of the cord, may give untoward results.

DR. ARTHUR L. CHUTE, Boston: Spinal anesthesia is of great value in cases of urology. I agree with most of what Dr. Martin has told us. In cases in which we have back pressure it is safer than any other anesthetic we have. Even in patients with more or less myocarditis, I am convinced that the danger

of spinal anesthesia is not so great as that of gas or ether anesthesia. I recently found that I have done more than 500 prostatectomies under spinal anesthesia, and with no deaths that I could attribute to the anesthetic. I am sure that I should have lost some of these patients as a result of the anesthetic if I had used inhalation anesthesia in these cases. A death under spinal anesthesia, coming, as it does, at the time of operation, is very shocking indeed. On the other hand, the deaths due to the action of ether on the kidneys rarely come earlier than from thirty-six to seventy-two hours after operation, and often at a much later time; they are none the less the result of the anesthetic, and I believe are more common than the spinal deaths. It is very easy to consider these deaths as due to hemorrhage or cardiac failure when they are really the result of the action of the ether on the kidneys. A death that follows, by a few days, a prostatectomy done under ether I believe should be charged to the inhalation anesthesia, unless it can be shown that the action of the kidneys has been adequate. I do not quite agree with Dr. Martin that it is necessary to have the spinal anesthesia always given by an anesthetist. It is a great comfort, but when the surgeon has learned to do it I think it can be done as well by him. There is much art as well as science in giving spinal anesthesia; no one can do it very well at first, but after some experience becomes expert. There should always be some one present whose duty it is to watch the patient's condition.

DR. ALBERT E. GOLDSTEIN, Baltimore: I believe we should sound a warning about the too free use of spinal anesthesia in the hands of the inexperienced. Dr. Labat, in a personal communication, stated that he believes that the patient should be put in the Trendelenburg position immediately, just as does Dr. Babcock, who has a corps of trained assistants to place the patient in the Trendelenburg position at once. Dr. Labat asserts that there is a cerebral anemia. After this occurs it is impossible to bring the patient back any more; therefore the patient should be put in the Trendelenburg position immediately. Relative to the statement of Dr. Martin that spinal anesthesia should be applied in cystoscopic cases and litholapaxy, I feel that the caudal is so simple and so easily applied that it should be used. There is no question that the blood pressure does drop in spinal anesthesia, sometimes 40 or 50 points, but in caudal anesthesia this never amounts to more than 20 or 30. About two weeks ago, I read a paper before the Academy of Medicine with a report of 500 cases of caudal anesthesia in which I had successful anesthesia in 85 per cent of the cases. There was a drop of pressure of from 15 to 20 points, but it never concerned me in the least. They all went through the operation with no bad effects, and with no concern relative to the condition of the patient such as we have in spinal anesthesia.

DR. HARRY W. MARTIN, Los Angeles: The reason we use spinal anesthesia in the cystoscopic cases is that many times caudal anesthesia does not give the same results. So far as the drop in blood pressure is concerned, I think we have never had a drop of more than 30 points in our urologic work.

Dangers of Theorizing in Medicine.—In the past there has been much theorizing, both in physiology and in medicine, often on very insufficient data. The experimental method has afforded a very certain and conclusive test of the inaccuracy of much work of this nature, and such results, important as they are, are nevertheless of a negative character and have sometimes led to the belief that there is some antagonism between experimental inquiry on the one hand and the result of observational methods on the other. Doubtless much loose thinking and many erroneous deductions may occur as the result of the direct and immediate transference of experimental animal results to the explanation of the phenomena of human disease, but this, again, arises from neglect of the fundamental principle that the conditions in the two cases are not alike, and also that we constantly think the phenomena of disease to be much simpler than they really are, and are perpetually hankering after cut-and-dried explanations of what are, in reality, exceedingly complex phenomena.—Bradford, J. R.: *Lancet* **2**:840 (Oct. 23) 1926.

DIVISION OF SENSORY ROOT ON BOTH SIDES

FIRST EXPERIENCE IN A SERIES OF FOUR HUNDRED AND THIRTY-TWO RADICAL OPERATIONS FOR MAJOR TRIGEMINAL NEURALGIA

CHARLES H. FRAZIER, M.D., Sc.D.
PHILADELPHIA

In the development of a plan of relief for major trigeminal neuralgia or tic douloureux, we have passed certain landmarks: First, section of the sensory root, as proposed by Spiller,[1] superseded resection of the gasserian ganglion in 1901. Secondly, the hazard of radical operations has been practically removed. In 1894, the mortality of resection of the gasserian ganglion was 22 per cent. In a series of 432 consecutive operations, the mortality in the Neurosurgical Clinic at the University Hospital has been only a fraction of 1 per cent. Thirdly, subtotal section of the sensory root replaced total section[2] in 1915; and finally, in 1919, it was proved[2] that the motor root need no longer be sacrificed. To be sure, other contributions have been made to the development of the technic, but these are the most important.

Ability of patient to approximate the jaws seven days after operation.

In this contribution, I will write on only one phase of the subject and incorporate the record of what, so far as I know, is the first occasion in which this radical operation, that is, section of the sensory root, has been performed on both sides in one person.

In some 1,220 cases of major trigeminal neuralgia that have been referred to me, there have been only seven of bilateral distribution; and by bilateral neuralgia, I mean not an occasional twinge on the opposite side, but an exact reproduction of the disease with all its terrors and agonies. The incidence of bilateral trigeminal neuralgia as reported may be only approximately correct, since no doubt in certain instances neuralgia may have developed on the opposite side months or years after the patient passed from my observation. However, it is unquestionably and fortunately a fact that true major trigeminal neuralgia, bilateral, is of infrequent occurrence. Nevertheless, the patient often asks, after being relieved of pain on one side, "Does the pain ever come back on the other side?"

Not only does the patient dread the thought of it—and apprehension is one of the major symptoms of this peculiar clinical entity—but the surgeon dreads it as

1. Spiller: The Division of the Sensory Root of the Trigeminus for the Relief of Tic Douloureux, Philadelphia M. J., Dec. 14, 1901.
2. Frazier, C. H.: Subtotal Resection of the Sensory Root for Relief of Major Trigeminal Neuralgia, Arch. Neurol. & Psychiat. **13**:378 (March) 1925.

well. Every surgeon will acknowledge that in the past he has shuddered at the thought of what might happen if he were forced to operate on the two sides in the same patient. On the one hand, he visualized a trophic keratitis of both eyes, with its possible ill consequences; on the other, he thought of what the patient would say if all the muscles of mastication, right and left, were paralyzed. These have been deterring influences, and the surgeon naturally has been content to battle along, when the opposite side became affected, with alcoholic injections, not altogether to the satisfaction or always to the relief of the patient.

But the last two modifications of the technic for section of the sensory root; i. e., the modification of 1915 in conservation of the ophthalmic division of the sensory root, and that of 1919 in preservation of the motor root, have removed the fear of these dreaded complications, so that now, if the occasion demands, the patient may have the radical operation performed on both sides, without unpleasant or serious consequences.

It has been proved, I think beyond a peradventure of doubt, in the first place, that it is possible to conserve the inner fibers, or ophthalmic portion, of the sensory root; in the second place, that by so doing trophic keratitis has been eliminated as a complication, and, in the third place, that the operation may be done without fear of recurrence. A fuller presentation of what is called subtotal section of the sensory root will be found in an earlier contribution.[2]

It has also been proved with equal certainty that the motor root may be conserved, and while at first this refinement of technic did not seem of much moment, its real significance is realized when the surgeon is confronted with neuralgia of bilateral distribution.

REPORT OF CASE

A woman, aged 51, returned to the Neurosurgical Clinic of the University Hospital, May 30, 1926. A major operation for trigeminal neuralgia had been performed, April 12, 1917, at which avulsion of the left sensory root was done under ether anesthetic, by the drop method. A butterfly incision was made and the dura was readily stripped from the base of the skull, exposing the middle meningeal artery. The foramen was plugged with wax; the third division was exposed, and the dura was stripped back until the sensory root was visible, not only to the operator but to those witnessing the operation. Bleeding was trivial. There were no unusual complications or difficulties and the wound was closed without drainage.

It was evident that no attempt had been made to conserve the motor root. In fact, at that time it was not a matter of routine. At all events, when the patient was examined on her second admission the electrical reaction of the muscles of mastication on the side of the operation were those of complete degeneration.

The patient returned to the clinic with the symptoms of major neuralgia confined to the maxillary division of the right side. The first paroxysms on this side made their appearance in 1924, seven years after the major operation on the left side. Although, as a matter of routine, we have since 1919 often conserved the motor root, I confess I was fearful lest by some accident I might fail in this particular instance; and, knowing that the muscles of mastication were completely paralyzed on the left side, I was not eager to assume the responsibility of an accidental injury to the motor root on the right side. I therefore advised an alcoholic injection. This the patient absolutely refused. Living at a great distance from the clinic, the patient was unwilling to consider anything but assurance of permanent relief. The possibilities of a life on liquid diet were presented, but to no effect. In order that there might be no misunderstanding a careful statement was prepared, relieving the surgeon of responsibility of any ill consequences, and duly signed.

June 9, 1926, a subtotal section of the right sensory root was performed. The usual approach was made. The dura was easily separated from the floor of the skull. The foramen was plugged. Considerable time was spent in exposing the superior surface of the ganglion, and for a while there was free oozing. However, a very satisfactory exposure was obtained of the ganglion and root. The sensory root seemed very small. The outer two thirds was sectioned, and the motor root left undisturbed. The latter was plainly seen by the operator and assistant, and apart from the light pressure of a thin cotton tampon, it was not traumatized. Its continuity at the conclusion of the operation was plainly in evidence. For hemostasis, one muscle graft was used. The wound was closed without drainage.

Immediately after the operation the patient could not approximate the jaws. I was confident, however, that the motor root had been preserved intact, and knowing how sensitive to trauma the root was, could readily understand how, incidental to the manipulations of the operation, the function of the root might be temporarily suspended. This proved to be the case, as on the seventh day the patient began to recover the function of the paralyzed muscles. Before discharge from the hospital, the patient could approximate the jaws, and ability to masticate food had been reestablished.

3600 Walnut Street.

GLIOMA OF PONS VAROLII SIMULATING A FRONTOMOTOR TUMOR *

TOM BENTLEY THROCKMORTON, M.D.
DES MOINES, IOWA

Tumors below the tentorium cerebelli, interfering with the circulation of the cerebral fluid, produce general symptoms early—headache, vomiting, choked disk. Infiltrating growths of the brain-stem may produce local symptoms early with latent general symptoms. In the case to be reported, the symptom group, while pointing to a definite brain-stem involvement, still savors largely in the main of a lesion involving the frontomotor region, as evidenced by a right-sided hemiplegia associated with an unstable emotional state in which forgetfulness and alternating phases of mild exaltation and depression with crying episodes played an important rôle, and consequently increased the difficulty in accurately localizing the tumor.

REPORT OF CASE

History.—J. B. B., a white man, aged 56, a veterinarian and farmer, seen, Oct. 3, 1922, complained chiefly of weakness of the right arm and leg, double vision, fulness in the head, vomiting, and thickness of speech. The fulness in the head had been present for two or three weeks, but the weakness of the right side had begun at a somewhat earlier period.

The family history was negative, and apparently there was nothing in the personal history having direct bearing on the present trouble. The patient had been a strong, vigorous man and, aside from typhoid at the age of 52, had never suffered from an illness of any consequence. There was no history of any serious accident or surgical operation. He was married at 19 years of age; his wife, still living and well, was the mother of five children. He had enjoyed a splendid appetite for years, had never taken a laxative to his knowledge, and had slept well, as a rule, but was obliged at times to get up at night to void urine. There was no history of alcoholism or venereal infection. His weight gradually increased from 185 to 193 pounds (84 to 87.5 Kg.). For some years he had noticed some diminution of hearing in the right ear.

* Read before the Section on Nervous and Mental Diseases at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

The onset of the trouble was apparently insidious, and not until the appearance of distinct motor weakness were other symptoms, more vague and bizarre in character, given much consideration by either patient or family. In December, 1921, while the patient was jacking up a heavy autotruck, the jack slipped and transmitted the weight of the elevated truck suddenly, and without warning, to the right upper extremity, the hand of which was holding the handle of the jack. Apparently the force was communicated mostly to the shoulder and neck regions, giving the parts a severe wrench or jam. As a result of this accident there were pain and weakness about the injured neck and shoulder for months, although osteopathic manipulation of the parts was said to have given some benefit for a few weeks. During the summer of 1922, the patient noticed that at times a "queer feeling" would come over his head, especially if he chanced to step on an uneven surface, such as a clod of dirt, a stone, or some other hard object. While he never fell or lacked ability to regain his balance, the statement was made by the patient that in case he had actually tended to fall there was a feeling of a lack of will power on his part to prevent a fall from taking place. Hand in hand with this peculiar sensation in the head was noticed also a beginning forgetfulness. This was particularly noticed by his wife, who often would write out a list of articles to be purchased at the store only to find her husband returning home empty handed and unmindful of the written slip. Some emotional instability was manifested at times, such as jocularity and hilarity without due cause, or depression and a tendency to weep.

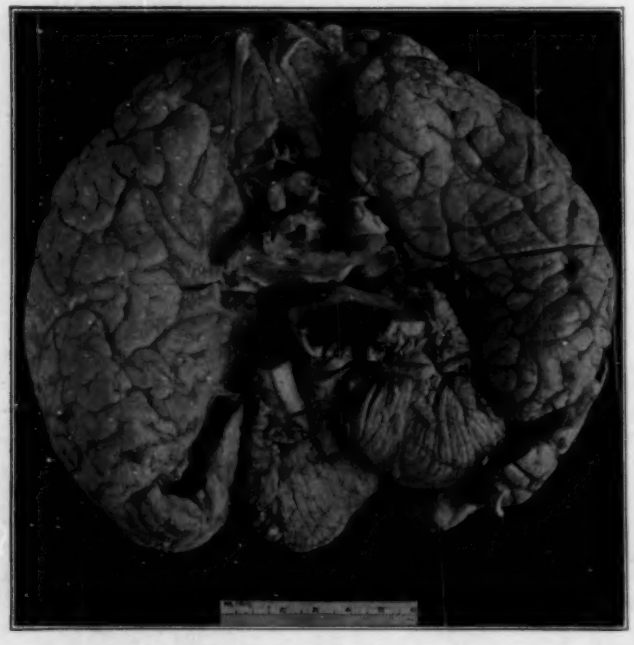

Fig. 1.—Base of brain, with section through tumor in pons.

Early in September, 1922, the patient noticed that jolting or jarring of the body produced pain in his neck. About this time he also noticed, when obliged to get up at night to void, that it was necessary for him to sit on the edge of the bed and to "collect himself," before attempting to walk, on account of a "dauncy" feeling in the head. Later, when attempting to climb over a board fence, he noticed that the right leg could not be as readily handled as the left. Soon afterward, weakness of the right upper extremity became evident, as manifested by an inability to strop his razor or freely to elevate the arm. While managing his automobile on a cross-country drive he noticed that the weakness of the right hand increased, and not infrequently he would rest the arm on the wheel and steer the car entirely with the left hand. After a rather strenuous drive one day he noticed, on getting out of the car, that the right leg was weak and felt clumsy when he attempted to walk. The weakness of the arm and leg persisting, the patient came to Des Moines, October 5, where he received treatment at the hand of an osteopathic Abrams exponent. Here the customary diagnosis of "so many ohms resistance cerebrospinal lues, sarcoma behind the left ear, and streptococcic infection of the sinuses" was made and treatment accordingly instituted. Following one of the treatments the patient suddenly grew worse, headache and diplopia developed, there was thickness of speech, and the weakness of the right arm and leg became more pronounced and was associated with a tingling and numbness in the parts. Some sensory aphasia developed, and reading became impossible on account of an inability to make sense of a complete sentence, although individual words could be spelled and their meaning readily understood. A day or two later, following the sudden change for the worse, severe vomiting attacks occurred without apparent cause, and the patient was obliged to take to his bed.

Examination.—This revealed a well developed cranium apparently free from defect or deformity. Tenderness was complained of when pressure was made over the left suboccipital region. The pupils were equal and regular in outline; they reacted promptly to light and in accommodation and convergence, with the consensual reflex preserved. Nystagmus was present, coarse movements to the left, fine movements to the right, with a well pronounced vertical nystagmus on rotating the eyes upward. Diplopia, on looking to the left, was elicited as a result of weakness of the left external rectus muscle. No hemianopia or diminution in size of the visual fields was elicited. Ophthalmoscopic examination revealed no changes in the disks or retinas aside from a little fulness of the veins. Weakness of the lower quadrant of the right side of the face was present, unassociated with sensory changes in the trifacial distribution. While the soft palate was drawn somewhat to the left side, the tip of the tongue protruded in the median line. Slurring of the speech was present, associated with a slowing down of the mental processes. While air conduction was better than bone, still the hearing was greatly reduced in both ears, ticks being heard only when a watch was placed in contact with the left ear, and at 1 inch distance from the right ear. The Galton-whistle tests showed 4, 5, 6½ and 8 absent on the right side, and the high tone limit reduced down to 6 on the left side. The Bárány tests did not produce nausea and, owing to the paralysis of the right arm, comparative past-pointing tests for this extremity were impossible. Aside from flexion and extension of the elbow, very little muscular action remained in the right upper extremity, the grip being very slight in the hand. Motor paralysis also was present in the right lower extremity. The tendon reflexes were all plus on the right side and were associated with right sided pathologic toe signs. The abdominal and cremasteric reflexes were absent on the right side, but preserved on the left side. There was a complete loss of the stereognostic sense in the right hand, with its preservation in the left. In the left upper extremity the grip was strong, and there was an absence of incoordination, dysdiadokokinesia, or asynergy. No sensory changes were found to cotton-wool touches, to sharp or dull, to heat or cold, or to tuning fork vibration. The pulmonary and cardiac systems were normal; the pulse was 76 and regular; there was a blood pressure of 124 systolic, and 85 diastolic. The motor weakness of the right lower extremity was well brought out when Babinski's combined flexion of the hip and trunk test was employed; also by the use of the sphygmomanometer apparatus[1] in ascertaining the amount of complemental counterpressure present. In the latter instance, when the unaffected left leg was elevated, and using 30 mm. as a starting point, a downward pressure of 34 mm. was made by the heel of the paralytic leg; whereas, attempts to elevate the paralytic extremity resulted in a downward thrust of from 40 to 45 mm. by the sound extremity, thus visualizing the amount of muscular energy produced in attempting to elevate the palsied extremity.

Laboratory Observations.—Laboratory aids gave no assistance to diagnosis, except through negative data. A cystitis—

1. Throckmorton, T. B.: A Simple Method for Demonstrating Motor Paralysis of the Lower Extremities, J. A. M. A. **80**: 1058 (April 14) 1923.

already present and undoubtedly due to contamination when attempts were made to pass a catheter while the patient was still taking the Abrams treatments—was well pronounced, the urine being full of albumin, pus, blood and bacteria. The hemoglobin was 90 per cent; leukocytes, 12,000 per cubic millimeter; erythrocytes, 4,480,000 per cubic millimeter; polymorphonuclears, 70 per cent; lymphocytes, 28 per cent, and eosinophils, 2 per cent. The spinal fluid showed no increase in pressure; it was clear, and globulin was absent; there were 4 cells to the cubic millimeter, with a negative Wassermann reaction. Roentgenograms of the skull were negative for osseous changes.

Subsequent Course.—During a period of some ten days' observation it was noticed that the motor weakness gradually increased, although it did seem as if the patient could control his palsied arm and leg better at some times than at others. However, the paralysis was progressive, the hearing entirely disappeared in the left ear, the emotional sphere became more unstable and, believing we were unquestionably dealing with a cerebral neoplasm, the patient was referred, October 22, to the neurologic department of the Mayo Clinic.

Here the clinical observations were rechecked with little, if any, differential change. Ventriculograms were indeterminate, but seemed to rule out the possibility of a frontal lobe tumor. A destructive arthritis involving the fifth and sixth cervical vertebrae was found on roentgen-ray examination, but this observation added no clue to the localization of the tumor. Aside from the nystagmus, the sixth nerve palsy, and loss of hearing in the left ear, the evidence seemed mostly in favor of a left frontomotor lesion. However, the patient gradually grew weaker; a pneumonia, complicated by an empyema, developed; a diffuse cellulitis of the left chest wall and abdominal regions took place following pleural drainage, and death ended the scene, November 30. Necropsy revealed a hemorrhagic glioma of the left half of the pons varolii.[2]

COMMENT

With the anatomicopathologic evidence at hand, no difficulty in diagnosis is encountered, but in assembling the facts pertinent to the case let us visualize, for the moment, the symptomatology and clinical evidence in retrospect. In the first place, it is questionable whether the trauma of the right shoulder and neck regions had any bearing on the brain-stem lesion. Nothing but a destructive arthritis was found on roentgenologic examination, and, in the absence of any relevant clinical evidence, it is only reasonable to assume that the injury was a coincidence and not of itself a causal factor. However, from an historical point of view, the injury with its resultant arthritis could not be entirely ignored.

Considering the development of symptoms in chronological order, it will be recalled that early in the summer of 1922 the patient complained of a queer feeling in the head—a feeling of instability when walking, a feeling, as it were, of a loss of balance, and of falling—and a beginning forgetfulness. Associated with this symptom complex was a beginning emotional instability—mild exaltation, on the one hand, alternating with mild depressive phases and crying episodes, on the other. These changes in the mental characteristics of a person heretofore possessing normal faculties, and which were the very first changes to be noted, were at least suggestive of a possible lesion in the prefrontal area of the left hemicerebrum. When, later, a slight weakness of the right leg was noticed, and eventually when the right upper extremity likewise showed evidence of motor palsy with an associated weakness of the lower quadrant of the right side of the face, the possibility of a subcortical lesion involving the left prefrontal area with its contiguous motor zone loomed very largely on the diagnostic horizon. In further support of such a possibility was the loss of the stereognostic sense of the right hand, a tingling and numbness of both arm and leg without objective sensory signs, and a speech involvement without apparent lingual paralysis. Such symptoms as these I have always been prone to look on as emanating from a central or cortical lesion rather than from a lesion interfering with sensations passing to the cord or brain.

But let us turn our attention for the moment to a consideration of the instability of the equilibratory apparatus with its concomitant train of symptoms. The earliest symptom recorded is that of a "queer feeling" in the head, a feeling as if the patient at times would fall, associated with a mental state that, should the equilibrium be actually lost, no will power seemed to be in reserve to prevent a fall from taking place.

Fig. 2.—Extent of hemorrhagic glioma of left half of pons.

Later, change of posture would at times produce a feeling of dizziness, and not infrequently it was necessary for the patient to "collect himself" following postural change before he felt certain that he could maintain his equilibrium while sitting or walking. Quite naturally, therefore, an explanation of this involvement of the equilibratory apparatus becomes proper, and should command our attention. It has long been known that persons suffering from arteriosclerosis of the cerebral vessels not infrequently complain of dizziness and transient loss of the sense of equilibrium; but in the case now under consideration no objective evidence of arterial hardening could be found in the vessels of the eyes, in the peripheral blood vessels, in the heart, or in the kidneys. That something, of other than a vascular nature, interfered with the auditory apparatus and its associated semicircular canals thus became evident. The hearing, it will be recalled, was reduced in both ears. For a number of years the patient had been aware of some loss of sense of hearing in the right ear, but not until the loss became almost total in the left ear was much consideration given to the

2. I am indebted to the Mayo Clinic for the necropsy report; also for the photographs of the brain.

loss of this special sense. Whether the semicircular canals were alone at fault, or whether the lesion was in the pons, became a question of paramount importance when one considered the probable etiology of the nystagmus, both horizontal and vertical. It will be recalled that horizontal nystagmus—more marked to the left—was present, thus pointing to the possibility of a left-sided lesion. Associated with the horizontal nystagmus was also a vertical nystagmus, beautifully illustrated when the eyeballs were rotated upward. That the latter condition unquestionably pointed to a pontile lesion was not to be ignored, although it seemed that, in spite of so striking an evidence of pontile involvement, the preponderance of clinical evidence, pointing to a left frontomotor lesion, still outweighed a brain-stem affair.

The diplopia was due to weakness of the left external rectus muscle. Here again, from a localizing point of

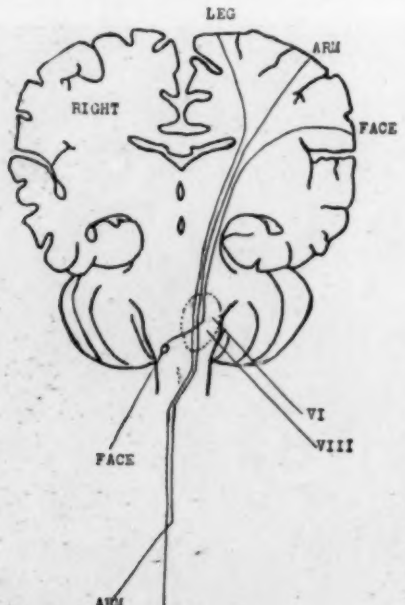

Fig. 3.—Location of pontile lesion, with resultant symptoms, including: psychic: forgetfulness, emotional instability, depression, exaltation, crying episodes; right astereognosis; speech involvement; sixth and eighth nerve involvement; nystagmus; subjective sensory symptoms in right arm and leg, and right hemiplegia.

view, credence can rarely be given to an isolated abducens palsy owing to the extreme length of the nerve as it traverses the base of the skull, for any little traction exerted on its fibers is sufficient to give paralytic symptoms. In this instance, however, it would appear that the resulting hemorrhage in the pons, interfering with the fibers or nucleus, in all probability was the cause of the sixth nerve palsy rather than that the paralysis was due to a mechanical stretching of the nerve trunk.

With the lesion definitely located in the left pons, it now becomes a rather easy matter to correlate some of the clinical evidence with the anatomic observations. The vertical nystagmus, the progressive diminution of hearing in the left ear, the weakness of the left external rectus muscle, and the motor weakness of the right lower face, right arm, and right leg, can all be readily explained by a left-side pontile lesion. The change in the mental faculties—as evidenced by forgetfulness and instability of the emotional sphere—the loss of the stereognostic sense in the right hand, and the speech defect without lingual involvement, cannot, I feel, be explained on the basis of a pontile lesion alone, at least from an anatomic point of view. Whether or not some interference with the cerebral circulation, either in the blood or cerebral fluid channels, may produce such changes as these, or whether in the case of a neoplasm of the brain-stem far reaching changes, secondary to indirect pressure, may sometimes take place and become productive of symptoms not as yet explainable on an anatomic basis, is, at best a mere conjecture. Clearly, in this instance, the mental changes were among the first to appear, and as such would ordinarily receive great consideration as localizing symptoms; and yet, from an anatomic point of view, no lesion existed in the prefrontal area to account neurologically for their presence. The important lesson gleamed from the study of this case is that an infiltrating tumor of the brain-stem—not interfering with the cerebral fluid circulation—is capable of producing symptoms which are chiefly local in character; that a vertical nystagmus has great weight as a localizing lesion of the brain-stem, and that it is possible to have symptoms ordinarily referable to a prefrontal lesion when only a tumor of the brain-stem can be demonstrated.

Bankers Trust Building.

ABSTRACT OF DISCUSSION

DR. PETER BASSOE, Chicago: This case is interesting to me because of the early symptoms. I recall the case of a young man whose only symptom for a long time was astereognosis of the right hand. He discovered it when he got on a street car and put his hand in his pocket and could not tell the different coins apart. After a time he developed left external rectus palsy, partial right hemiplegia and some general convulsions. After death, a glioma of the pons was found. This case helps to emphasize the fact that when symptoms such as external rectus palsy occur early, before there is reason to suspect any particular secondary pressure changes, it is of distinct localizing value, and I understood from the paper that diplopia was noted quite early. Was it not?

DR. THROCKMORTON: No, that was when the man complained to me when I first saw him that he had diplopia, but that did not come until quite late.

DR. BASSOE: In that case it would not be of any localizing value, but in the case which I mentioned it must be regarded as a focal symptom. Nystagmus is of some value as a focal symptom, as it is not likely to occur in tumor of the hemispheres. I should like to know whether there was enough internal hydrocephalus to account for the astereognosis by pressure.

DR. GEORGE A. MOLEEN, Denver: The facial paralysis and the external rectus paralysis to which Dr. Bassoe referred, together with nystagmus, and especially the nerve deafness on that side, is suggestive of a brain stem lesion, especially in the anterior superior quadrant of the pons. On the other hand, even the presence of such a syndrome and the absence of the common subtentorial observations rather weakens our position in the estimation of such a tumor. Again, I was struck with the fact that this tumor had been progressing, so far as the clinical symptomatology was concerned, for a matter of two or three years, and while I am not familiar with the rate of growth, my general conception has been that gliomas are not slow growing tumors as a rule. Furthermore, the lesion is stated to have involved the sixth nucleus. If that were the case, it must have been in the anterior superior part of the pons and above the crossing of the facial fibers; but I can not understand why the facial involvement was not on the opposite side. Again I feel inclined to incriminate the pathologist in

his false localization of the tumor. Certainly, such studies are illuminating and teach us at least to recognize our own insecurity, which must always obtain especially when localizing tumors in the frontal lobe. There have been a great many mistakes made, and one can often understand why tumors presumed to be in the frontal lobe have been found in the occipital region and occiptal tumors found in the frontal region at the necropsy. That has been a not uncommon experience, however disturbing it is. Such studies as this will tend to illuminate the field so that these errors will not be so common.

DR. A. L. SKOOG, Kansas City, Mo.: There is a complex syndrome to consider in our diagnostic conclusion. The internal hydrocephalus is a factor that probably should have been studied very carefully by the pathologist; secondly, there is the history of trauma. Dr. Throckmorton tells me that was about one year before the accident. There is a possibility of the presence of some other lesions that might not have been observed unless very careful, minute examination of the brain had been made by the pathologist. That is an important point. For instance, there may have been pathologic changes in the brain as a result of the trauma one year or a couple of years before the death of this patient.

DR. JAMES B. AYER, Boston: I should like to ask Dr. Throckmorton whether there were any indications of associated ocular movements.

DR. TOM B. THROCKMORTON, Des Moines, Iowa: I think we can all agree that when we have the pathologic specimen before us it is easier to correlate many things with our clinical observations than we sometimes can do ante mortem. The problem here presented was whether we were dealing with a brain stem lesion or with a prefrontal growth of the left side, or whether there was a combination of the two. There was no question as to the brain stem involvement, as evidenced by the fact that the man had a gradually diminishing hearing on the left side associated with a sixth nerve weakness. The very first symptom, however, that he presented was some disturbance in his equilibratory apparatus, and, with a nystagmus, both horizontal and vertical, I am sure that no one would question the consideration of a pontile involvement. But when the symptoms also pointed to the psychic area, i. e., a change in the character of the man, his emotional instability, his depression, his crying episodes, and at times his mild exaltation, the loss of the stereognostic sense in the hand, all such symptoms seemed to me to point possibly more to a left hemisphere involvement rather than to a pontile lesion. As regards the question of internal hydrocephalus, I am indebted to the Mayo Clinic for the pictures here presented, and nothing in the report from the clinic mentioned the possibility of internal hydrocephalus. It will be recalled, however, that the ventriculograms were negative; and it is only reasonable to assume, in the absence of choked disk up to the time of death of the patient, that internal hydrocephalus did not exist. The absence of symptoms of increased intracranial pressure such as headache, choked disk, and vomiting was another thing that seemed to point against a subtentorial growth, because my experience has been, particularly if there is some interference with the cerebral fluid circulation, that these symptoms are rather fulminating in character. As to the ocular associated movements, nothing of an objective nature was shown, except the slight weakness of the left external rectus muscle, producing diplopia. In the absence of gliomatous change in the left cerebral hemisphere, one can only speculate as to why symptoms were present which ordinarily are looked on as resulting from prefrontal lesions when in fact only a brain stem tumor was found post mortem.

Physical Examination Most Important in Diagnosis.—One of the dangers which beset the medical student of today is that he may be tempted to neglect that thorough grounding in auscultation and percussion and the simpler chemical and microscopic tests which can be made at the bedside, and may come to rely on reports from the laboratory of examinations which he has not himself carried out. To this danger all examiners in medicine and surgery are keenly alive.—Garrod, Archibald: *Brit. M. J.* **2**:622 (Oct. 9) 1926.

BLEPHAROCHALASIS

REPORT OF THREE CASES *

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ROCHESTER, MINN.

The disease of the upper eyelids, to which Fuchs,[1] in 1896, gave the name of blepharochalasis, had not been reported by American ophthalmologists until 1913, when Weidler,[2] before the Section on Ophthalmology of the American Medical Association, reported two cases and gave the microscopic findings in one of them. Cases of blepharochalasis had been reported from several European clinics, and the writers had discussed the etiology, pathology and treatment of diseases of the lids similar to, but not identical with, those reported by Fuchs. The controversy which had been carried on in the European journals concerning the cause of the

Fig. 1.—Stage of blepharochalasis without swelling characterized by wrinkling of the skin of the lid.

enlargement of the lids was referred to by Weidler in his paper, and he summarized the literature on the subject at that time, mentioning the various names under which these diseases had been discussed and the clinical and pathologic findings on which the discussions had been based. Since Weidler's paper was written, seven cases have been reported in American literature. In 1914, Stieren[3] reported two typical cases of blepharochalasis and was able to add the pathologic findings of one case. Jenison,[4] in 1915, and Randolph,[5] in 1916,

* From the Section on Ophthalmology, Mayo Clinic.

* Read before the Section on Ophthalmology at the Seventy-Seventh Annual Session of the American Medical Association, Dallas, Texas, April, 1926.

1. Fuchs, E.: Ueber Blepharochalasis (Erschlaffung der Lidhaut), Wien. klin. Wchnschr. **9**: 109, 1896.

2. Weidler, W. B.: Blepharochalasis: Report of Two Cases, with the Microscopic Examination, J. A. M. A. **61**: 1128-1132 (Sept. 27) 1913.

3. Stieren, E.: Blepharochalasis: Report of Two Cases, Ann. Ophth. **13**: 625-632, 1914.

4. Jenison, Nancy: Blepharochalasis, New York M. J. **102**: 555-556, 1915.

5. Randolph, R. L.: A Case of Blepharochalasis—A Variety of Dermatolysis, Ophth. Rec. **25**: 616-618 (Dec.) 1916.

each reported one case, but with very brief description and no pathologic findings. Heckel,[6] in 1921, reported a case of monocular occurrence of the disease which was quite typical, though Fuchs says that it is always bilateral. Verhoeff and Friedenwald,[7] in 1922, reported one case which came to operation. They were able to make quite satisfactory pathologic examination of the eyelids by means of excised pieces of the skin, and they directed attention to the vascular elements of the skin and subcutaneous tissue in presenting the histologic picture of the disease. Friedenwald[8] has reported still another case which was similar to that reported with Verhoeff, except that it concerned a negro man, aged 50. So far as I can learn, this is the first case of blepharochalasis in a negro which has been reported under that name. Shoemaker,[9] in 1904, reported a case of "bilateral enlargement of the lacrimal glands" in a

Fig. 2.—Intumescent stage of blepharochalasis. The swelling had been constant for nearly fifteen years.

young negress, concerning which Weidler[2] states that "from the pictures of the case and the history, it would seem that this might also have been a case of blepharochalasis."

The disease is usually found in young persons as an intermittent swelling of the upper lids. It first makes its appearance soon after puberty as a transient edema of the upper lids lasting for a few hours, the attacks coming on at intervals of a few days or a few weeks. Succeeding attacks last longer and appear more frequently, until a permanent swelling of the lid with great thinning of the skin and bagginess of the lids results. The bagginess and atrophy of the skin are the characteristics of the disease by which the name blepharochalasis is suggested. The onset is usually insidious, and its early manifestations are overlooked or misinterpreted. The diagnosis becomes clear only after permanent changes are brought about in the lids.

The disease is more commonly found in young girls but has been observed in young boys and even in old men. Fuchs[1] observed it in the lids of a man past middle life. It has been recognized in later life in persons who have had the swelling of the lid and atrophic appearance of the skin since early youth. The cases which I wish to report here illustrate the occurrence of blepharochalasis in persons of different race, sex and age, and show the differences in clinical appearances.

REPORT OF CASES

CASE 1.—A woman, aged 19, who had always lived in a Southern state, came to the clinic in July, 1921, because of ptosis and wrinkling of the skin of the lids and transient palpebral edema. When 11 years old, she noticed, on awaking one morning, a swelling of the right upper eyelid, which lasted about four hours. Subsequent swellings of the upper lid occurred at intervals of from four to eight months. She began menstruation at 15 and continued to menstruate regularly at intervals of twenty-eight days, with no noticeable relationship to the swelling of the lids. In 1918, two teeth were extracted because of periapical infection, and in 1919 the tonsils were removed. Following each of these operations, the swelling of the lids occurred twice in the period of one year. During an attack of pharyngitis and tonsillitis, before the tonsils were removed, the lids were swollen. From September, 1920, to April, 1921, the lids were continuously moderately swollen. In April and May, 1921, they were painful and severely swollen, often for periods of forty-eight hours. The right lid was usually swollen more than the left. Since 1915, the right upper lid had drooped to a considerable extent, the left only slightly. The patient never had headache during the time the lids were puffy but had suffered from headache between times.

When examined in the clinic, the skin of the lids was very thin, reddish brown, and markedly wrinkled and furrowed. There was marked ptosis of the right upper lid and a slight drooping of the left upper lid (fig. 1). There appeared to be no subcutaneous tissue in the lid such as is normally felt, nor were there any nodules or lumps to be felt. When the lids were everted, the conjunctiva was seen to be thin, injected and slightly roughened. The general examination revealed a slight enlargement of the thyroid and left middle ear deafness. The lips were thin, and there was no duplication of the mucous membrane. The Wassermann reaction was negative. Hemoglobin content and differential blood count were normal. No plasmodia were found. An indefinite history of urticaria was elicited, but the patient had suffered no recent attacks.

CASE 2.—A negress, aged 28, also a resident of a Southern state, came to the clinic in August, 1921, because of persistent swelling of the upper lids. She had been in good health as a child, except for scarlet fever at the age of 11. When she was 12, the right upper eyelid became swollen in the temporal portion. Two years later the left lid began to swell. Both upper lids had been puffy and baggy ever since. There was some variation in the amount of swelling from time to time, the skin often hanging down over the palpebral fissure and obscuring the vision. There had been no pain nor sign of inflammation of the lids, and the swelling was never accompanied by fever.

On examination the upper lids were much thickened above the tarsal plate; the skin was thin and the subcutaneous tissue firm (fig. 2). The lid did not pit on pressure but seemed to be edematous. That part of the skin covering the tarsal plate was not altered, nor was the subcutaneous tissue edematous in this area. The palpebral fold was the dividing line between the

6. Heckel, E. B.: Blepharochalasis with Ptosis: Report of a Case, Am. J. Ophth. **4**: 273-275 (April) 1921.
7. Verhoeff, F. H., and Friedenwald, J. S.: Blepharochalasis, Arch. f. Ophth. **51**: 554-559 (Nov.) 1922.
8. Friedenwald, J. S.: Further Note on Blepharochalasis, Arch. Ophth. **52**: 367 (July) 1923.
9. Shoemaker, W. T.: A Case of Bilateral Enlargement of the Lacrimal Glands, Ann. Ophth. **13**: 513-519, 1904.

altered and the unaltered skin. The palpebral fissure was almond-shaped because of the overhang of the baggy temporal part of the lid. On deep pressure over the most swollen area of the lids, fine nodules could be felt which resembled in size and consistency the nodules felt in lymphangioma. When the lids were everted and strongly retracted, a large soft red mass could be pressed downward through the fornix. With the exception of the lids no abnormality was found about the eyes. Operation was advised to correct the bagginess of the lids, but the patient would not consider it. She left the clinic without a general physical examination having been made.

CASE 3.—A boy, aged 13, was brought to the clinic in August, 1925, because of puffy eyelids. He had had the usual children's diseases but not scarlet fever. In 1919, he had had an attack of influenza. The general history was without significance, except that he had "hives" on a few occasions. The mother had not noted any relation between the onset of the swelling of the lids and the urticaria. Late in 1924, his mother noticed a swelling of his upper eyelids. The swelling occurred without inflammation, although the skin of the lids was reddened. During the winter there was some variation in the amount of swelling of the lids, and during the spring months it was absent altogether. In July, the swelling came on again more marked than at any time previously and continued to increase up to the time he was brought to the clinic in August.

At examination the upper lids were baggy, full, soft and overhanging (fig. 3). The skin between the palpebral fold and the brow was thin and atrophic but not wrinkled. The skin was unaltered between the palpebral fold and the margin of the lid. No nodules nor masses could be felt beneath the orbital margin. The thickness of the lid seemed to be due entirely to edema, though it would not pit on pressure. The general physical examination was negative. There was no enlargement of the neck nor duplication of the upper lip. Slight albuminuria was found on one occasion, though repeated tests were negative. The Wassermann reaction was negative. The tuberculin test was reported as positive. The boy was given a salt-free diet with fluids restricted to 1 liter in twenty-four hours, and 1 Gm. of ammonium chloride was administered three times daily for one week, with no effect on the swelling of the eyelids.

COMMENT

Cases of blepharochalasis reported from European clinics have come from various nationalities, but all from the white race. Shoemaker's [9] patient, a negress, aged 19, had noticed swelling of the upper lids since the age of 14. Although he reported it not as a case of blepharochalasis but as one of "bilateral enlargement of the lacrimal glands," I think that Weidler [2] is correct in assuming that it should be classed as blepharochalasis.

In Friedenwald's [8] case, reported as one of blepharochalasis in a negro, aged 50, a swelling had been present "for a long time." Both upper eyelids were strikingly baggy, with twice as much skin as is normally present, soft, pliable and suggesting edema; the surface was covered with many fine wrinkles with deficiency of subcutaneous tissue, and trichiasis and keratitis were present. The pathologic examination by Verhoeff [7] confirmed the diagnosis.

The case of the negress presented here is the third to be reported in this country. The onset and course of the disease were characteristic from the beginning. The fulness of the lids, without ptosis or wrinkling of the skin, however, is a stage in the course of the disease which I wish to discuss later. While no cases have been reported as occurring in the other races, I have no doubt that it occurs in all races. Attention has been called to the fulness of the upper lids in orientals. The detection of early signs of the disease would probably be more difficult in the Chinese, for example, but the later stages of the disease, characterized by atrophy and marked bagginess of the lids, should be easy to diagnose.

Blepharochalasis occurs much more frequently in the female than in the male. Most of the cases reported from European clinics were of young women, although Fuchs, in his article describing the disease and giving the name by which it is now known, records as a typical case that of a man who developed baggy lids after blowing a horn. In the twelve cases reported in American literature, including the three here reported, nine were in females and three in males. In only one previous instance has the disease been reported in young boys. Jenison's [4] patient and the boy reported here developed the disease at the same age. While definite information is lacking, it is not probable that they had reached puberty at the time of the first swelling of the lids.

The association of the establishment of menstruation with the onset of the swelling of the lids has been mentioned by a few writers. Stieren [3] reported the onset of swelling at the time of beginning menstruation but did not emphasize the coincidence. In Heckel's [6] case the first symptoms of blepharochalasis appeared at the time of the onset of menstruation, but he thinks that had nothing to do with the swelling of the lids. Weidler [2] says, "It seems to bear some relation to the beginning of menstruation and, from study of the records of the cases so far reported, I find that nearly all of them began at or near the time of the first period." In no case, however, has it been reported that the swelling was always coincident with menstruation nor changed to any extent at the period of menstruation.

Fig. 3.—Early stage of blepharochalasis, showing bagginess of the temporal portion of the upper lids without marked alteration in the skin.

The occurrence of the disease in boys as well as in girls clearly shows that it is not directly related to menstruation, yet the onset, at about the same age, that is, from 10 to 17 years, places it definitely within the period of functional endocrine development; and perhaps it is a result of that development. That the condition may bear some relation to the development of

the thyroid has been suggested by Ascher.[10] In 1919, he described cases in which he noted the occurrence of blepharochalasis with struma and double lip. In 1922, he[11] again called attention to this syndrome and reported two other cases. From the literature he was able to collect eight cases, not all of which were typical. These cases were reported by Wirth,[12] Weve[13] and Ascher.[11]

Eigel[14] reported the case of a boy, aged 16, who manifested a general thickening of the upper lip and hanging down of the upper lids at the age of 10. At first there were attacks of swelling of the upper lids lasting from three to four days, so that the patient had to hold the head back in order to see. There was slight enlargement of the neck, and his mother feared a goiter. An internist found mild infantalism and slight enlargement of the thyroid. Histologic examination of the palpebral tissue showed edema of the skin and mucous membrane, with cellular infiltration around the small

Data in Twelve Cases of Blepharochalasis Reported in American Literature *

Author	Year	Race	Sex†	Age at Examination, Years	Age at Onset, Years
Weidler	1913	White	♀	16	14
Weidler	1913	White	♀	14	11
Stieren	1914	White	♀	19	12
Stieren	1914	White	♀	14	11
Jenison	1915	White	♂	13	10
Randolph	1916	White	♀	15	At birth
Heckel	1921	White	♀	19	14
Verhoeff and Friedenwald	1923	White	♀	20	17
Friedenwald	1923	Negro	♂	50	Swelling had persisted "a long time"
Benedict	1926	White	♀	19	11
Benedict	1926	Negro	♀	28	11
Benedict	1926	White	♂	13	10

* The case of Shoemaker already referred to is not included; the patient was a negress, aged 19, and her symptoms appeared at the age of 14.
† In this column, ♂ indicates male; ♀, female.

vessels. Examination of the skin of other parts of the body showed generalized infiltration suggesting the action of a general toxin. Eigel remarks that in cases of exophthalmic goiter there is a tendency toward general edema, with predilection to the lids and lips, and suggests that histologic studies of the skin should be made in cases of exophthalmic goiter. The occurrence of Ascher's syndrome has been noted in both sexes, and it is probable that it is related to the development of the thyroid gland and bears only an incidental relation to puberty.

Blepharochalasis is to be found in two stages. The first is the intumescent stage or stage of edema. The early attacks of swelling resemble those of angioneurotic edema and last, usually, for from two to four days, without pain, and with only slight redness of the skin. After several attacks of swelling, one of two things occurs: (1) The swelling becomes constant with bagginess of the skin of the lid so that loose folds hang down over the margin, giving the appearance of water-filled bags, with the skin altered slightly in color, very thin, and slightly folded or wrinkled; or (2) the swelling disappears entirely or occurs for only short times, at intervals of weeks or months, and the skin becomes reddish brown and wrinkled, and is thrown into horizontal folds resembling brown wrinkled cigaret paper. The latter condition causes less interference with vision but may be accompanied by true ptosis, as shown by the first case of this series. The stage of wrinkling is the end stage of the disease. It has been confused with chronic atonic ptosis, which condition it indeed closely resembles, but the latter can be differentiated by the absence of attacks of swelling. Schreiber[15] compares the disease with the acrodermatitis chronica progressiva of Herxheimer.

The disease cannot be considered a frequent occurrence in cases of exophthalmic goiter. In the reported cases of Ascher's syndrome there were no symptoms of exophthalmic goiter noted, and Ascher himself was unable to find blepharochalasis and double lip in cases referred to him from a large goiter clinic. In the Mayo Clinic, the occurrence of blepharochalasis and double lip in cases of goiter has never been noted. Edema of the upper lids with mild exophthalmos, which in itself is probably due to edema of the soft tissues behind the globe, may be an early sign of exophthalmic goiter, but the change in the skin of the lid characteristic of blepharochalasis never develops to a noticeable extent.

The only treatment suggested for the relief of blepharochalasis is excision of the redundant skin and subcutaneous tissue, with fixation of the lower margin of the wound to the upper margin of the tarsus. If the association of the disease with development of the endocrine glands can be substantiated, it is probable that some medical treatment can be applied for the relief during the intumescent stages. For the ptosis that results from the atrophic changes in the skin, only surgical measures can be applied with hope of success.

ABSTRACT OF DISCUSSION

DR. CONRAD BERENS, New York: I was particularly interested in Dr. Benedict's study, for I have operated on two patients with this condition and was confused in regard to the classification and the pathology. The condition is not as rare as the small number of reports in the literature would seem to indicate. This is due to two factors: first, that patients do not complain of the milder degrees of this condition, and, second, that the transient attacks of swelling of the eyelids are frequently treated by physicians practicing general medicine who do not recognize the condition as blepharochalasis, and do not refer their patients to ophthalmologists for treatment. In my cases, differential staining methods with particular reference to the study of the elastic fibers failed to elicit marked change in these fibers, which agreed with the results of Rohmer, Weidler and Friedenwald, although Rosenstein, Gehr and Morax noted atrophy of these fibers. It is possible that the elastic fibers were slightly thinned as a result of the apparent widening of the spaces in the subcutaneous tissue of the corium, which may, in turn, have been the result of the procaine injection. He also found no evidence of the invasion of the tissues by round cells as noted by Weidler and Eigel. In one case, that of a young medical student who had had swelling of the eyelids intermittently since he was 4 years old, and in whom, clinically, there was congestion of the superficial vessels of the skin, there was no apparent increase in the number of blood vessels when compared with sections of the normal eyelid. Parsons classifies this condition among the atrophies and Fuchs among the dystrophies, but it would seem as though in the early stages there might be some hypertrophy of the elements of the skin, for thickening of the skin has been reported clinically, and microscopically there has been an increase in the size of the blood vessels and lymphatics noted

10. Ascher, K. W.: Blepharochalasis mit Struma und Doppellippe, Klin. Monatsbl. f. Augenh. **65**: 86-96, 1920.
11. Ascher, K. W.: Das Syndrom Blepharochalasis, Struma und Doppellippe, Klin. Wchnschr. **1**: 2287-2288 (Nov. 11) 1922.
12. Wirth, M.: Beiderseitige Lidgeschwulst, kombiniert mit Geschwulstbildung der Oberlippe, Ztschr. f. Augenh. **44**: 176-178, 1920.
13. Weve, quoted by Eigel.
14. Eigel, Walter: Blepharochalasis und Doppellippe ein thyreotoxisches Oedem? Deutsch. med. Wchnschr. **51**: 1947-1949 (Nov. 20) 1925.
15. Schreiber, L., quoted from Eigel.

by several observers. In the later stages, both clinically and microscopically, there is atrophy of the tissues. Both my patients operated on were fairly young, 26 and 37, respectively. One showed actual thickening of the skin clinically, although he had known of the existence of the condition since he was 4 years of age, and when the right eyelid was operated on, the skin fold hung down so far that it obstructed his field of vision. In the second case there was only a slight thinning of the skin of the eyelids. The etiology of this condition is still unknown, and Dr. Benedict's theory that this is the expression of endocrine disturbance is interesting, although I think it is due to an allergic reaction, even though intradermal tests were negative in two of the three patients tested. The intracutaneous tests were positive in a woman, aged 44, who had had the condition for three years. She reacted negatively to bacteria, but gave positive reactions to oats, pork and tomatoes, as well as to dog dander. A slight amount of exophthalmos has been noted in two of the patients, and it would seem as though the orbital tissues also shared in the disease. The differential diagnosis of these conditions presents difficulties, and I wonder whether it was correct to include Shoemaker's case in which there was swelling of the lacrimal gland, occurring in a negress, among the cases of blepharochalasis. If blepharochalasis is the expression of an allergic reaction, it would seem proper that the lacrimal gland should participate in the reaction, for it is an epiblastic structure.

SILENT PULMONARY CAVITIES

THEIR PROBABLE MECHANISM, DIAGNOSIS AND PROGNOSIS

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The frequent discrepancies between roentgenologic observations and physical signs in pulmonary tuberculosis have long drawn the attention of the phthisiologist, and the study and close correlation of roentgenology and semeiology have brought a revision in many of the physical signs, giving a different interpretation and significance to many of them. Pulmonary cavities offer a broad field in this respect; not only are the so-called classic signs of cavitation missing in certain cases of pulmonary cavities, but at times no adventitious sounds are elicited at all, though roentgenologically there is no doubt of the existence of such a cavernum. To the general practitioner, and even to the specialist in tuberculosis, this might seem a rare phenomenon and of little clinical value, but its clinical importance becomes at once self-evident in view of the observations of recent investigators.

Burnard and Garrard,[1] in a study of a large number of cases of pulmonary cavities, have found that about 55 per cent of the cavities were silent; i. e., they did not exhibit any of the textbook signs of cavitation. Lydtin [2] found silent pulmonary cavities in an even greater number. In 145 cases of definite pulmonary cavitation, determined by roentgenoscopy and roentgenography, I found that sixty-six lacked the classic signs of cavitation; i. e., about 45 per cent of pulmonary cavities belong to the silent class.

There are at least two kinds of silent cavities as far as ascultation is concerned: (*a*) absolutely mute, i. e., no stethoscopic signs are elicited at all, or no adventitious sounds are heard over the area of cavitation; (*b*) relatively silent, i. e., cavities in which the classic signs of cavitation are lacking, but in which there are other adventitious stethoscopic signs, such as râles, bronchovesicular breathing, and auscultatory percussion signs. The latter class of silent cavities predominate; in this series, the ratio was about 2:1.

The size of the cavities bears no relation to signs; in both of these groups of silent cavities the sizes varied from 2 by 2 cm. to 10 by 12 cm. Figure 1 shows a small round cavity about 2 cm. in diameter at the inner zone of the second interspace of the right pulmonic field. The only adventitious sounds heard over this area were harsh inspiratory sounds and posttusic subcrepitant râles. This case was treated with artificial pneumothorax, and the cavity became completely obliterated. Figure 2 shows a large cavity occupying the entire apical field of the left lung extending to the lower margin of the second rib. No breath sounds at all were elicited over this area, either anteriorly or posteriorly.

The anatomic extent of involvement of the pulmonary tissue had no bearing on the auscultatory signs of these

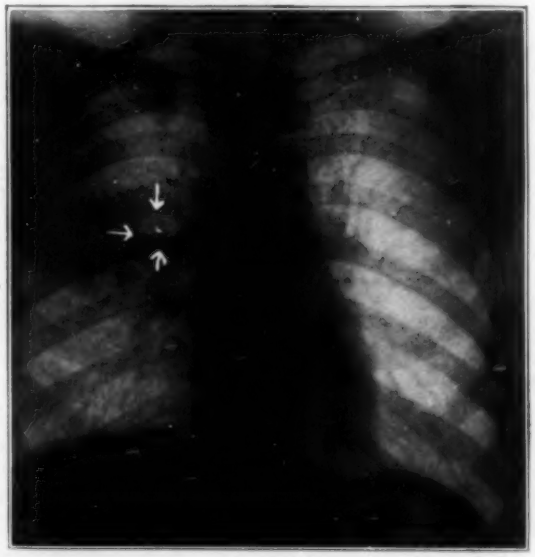

Fig. 1.—Small cavity near third rib in inner zone of right pulmonic field. Harsh inspiratory sound and posttussic râles heard over this area.

cavities; both groups were found in the far advanced as well as in the moderately advanced cases of pulmonary tuberculosis. There were just as many cavities of either group in the right lung as in the left lung. The location of the cavities in the pulmonic field appeared to be a certain factor in the auscultatory signs of these so-called silent cavities, as will be discussed later.

What is the mechanism of either of these silent or mute cavities? No doubt, many factors, singly or jointly, play their rôle in the production of the alteration of the auscultatory signs of these cavities, some of these factors having perhaps also a bearing on the prognosis of the case.

In discussing the mechanism of amphoric breathing in pneumothorax, I [3] pointed out that the amphoric sound is a modified breath sound caused by the entrance of air into the pleural cavity through the visceral-pleural opening, setting up sympathetic vibrations in the pneumothoracic cavity which imparts the amphoric quality to the sound; whereas if no opening exists in the visceral

1. Burnard, R., and Garrard, R.: La moitié des cavernes tuberculeuses du poumon sont muettes à l'auscultation, Presse méd. **30**: 467 (May 31) 1922.

2. Lydtin, K.: Kavernendiagnose and Prognose, Beitr. z. Klin. d. Tuberk. **62**: 1, 1925.

3. Bendove, R. A.: The Significance of Amphoric Breathing, Am. J. M. Sc. **172**: 221 (Aug.) 1926.

pleura, no amphoric breathing is elicited. The same mechanism, no doubt, is responsible for the absence or presence of cavernous breathing over a pulmonary cavity.

The classic cavernous breathing is produced by the entrance of air into the cavernum, the smooth and elastic walls of which are set into vibrations which impart the cavernous tinge to the breath sounds; the larger the

Fig. 2.—Large cavity extending over entire apex to lower margin of second rib of the left lung. No breath sounds heard at all over this area. (There is also an apical and basal localized pneumothorax on the right.)

cavity and the smoother the walls, the more vibratile they are and the more intense and definite is the cavernous tone of the breath sound. Should, however, the bronchial opening become obliterated either by fibrous or by mucopurulent material, no ingress or egress of air would take place, and the breath sounds would be altogether absent; or if the cavity is small and deep seated and surrounded by healthy lung tissue, normal vesicular breathing might be heard over such an area. Figure 3 shows a small cavity at the base of the right lung, over which normal vesicular breathing was elicited. This cavity was deep seated, as could be determined by roentgenoscopy and stereoscopic roentgenography. Such cavities are of the absolutely mute type. There are certain cavities which give signs of cavitation at one time, and absent breath sounds at another time; the absent breathing is probably due to a plugging of the afferent bronchus with thick sputum.

The relatively silent cavities have probably a patent afferent bronchus through which an inflow and outflow of air takes place, but the walls of the cavity are soft and ragged and not very vibratile; consequently the cavernous pitch is not produced. The walls of certain of these cavities are very poorly outlined on the roentgenogram, though after the induction of pneumothorax when the secreta and débris are squeezed out from the cavernum, its walls stand out conspicuously. Figures 4 and 5 are illustrative in this respect.

On the other hand, in all cases in which cavernous breathing is heard over the entire area of the cavity, it disappears gradually after the induction of pneumothorax, changing at first into bronchovesicular breathing, which grows fainter and fainter as the pneumothorax increases. In many such cases, the bronchovesicular breathing is probably to be considered as modified cavernous breathing produced by the new medium of conduction. The medium of conduction seems to have a great bearing on the modification of the cavernous sounds. The showers of râles heard over such areas are produced by the stirring of the cavernous secretion caused by the inrushing air into the cavernum.

The peculiar harsh inspiratory sound heard in some of these cavities might be explained as follows: The walls of deep seated cavities are brought into apposition with one another after expiration because of the surrounding elastic lung tissue, and the separation of the walls during inspiration is accompanied by this peculiar harsh sound.

That these roentgenologic annular shadows are not merely confined to the pleura, as maintained by Sampson, Heize and Brown,[4] but are definite pulmonary cavities, has been proved by many necropsies; and Dunham and Hayes [5] reported that all necropsies of known annular shadows proved to be cavities in the lungs. Furthermore, in all of these cases which were treated with artificial pneumothorax, the latter brought about an alteration in shape and change in location, with a gradual lessening of the size of the cavity leading to its complete obliteration, which could never take place if the shadow in question were due to adhesions between the visceral and parietal pleura. This fact has been brought out clearly by Burnham and Brown [6] in their article on the interpretation of annular shadows, in which they prove them all to be pulmonary cavities.

The question then arises: Are there any specific signs other than the hitherto known classic physical signs which would indicate the presence of cavitation? Unfortunately, there is no other single sign which could

Fig. 3.—Oval shaped cavity in middle portion of fourth interspace. Normal vesicular breathing is heard over this area anteriorly and posteriorly.

be considered as pathognomonic for pulmonary cavities. There are, however, a certain group of signs which,

4. Sampson, H. L.; Heize, F., and Brown, L.: Pulmonary and Pleural Annular Radiographic Shadows, Am. Rev. Tuberc. **2**: 664 (Jan.) 1919.

5. Dunham, K., and Hayes, J. N.: Comparison of Stereoroentgenograms of the Chest with Autopsy Findings, Tr. Nat. Tuberc. A., 1919, p. 324.

6. Burnham, M. P., and Brown, P. K.: A Criticism of Recent Interpretations of Annular Shadows in Lung Roentgenograms, Am. Rev. Tuberc. **6**: 469 (Aug.) 1922.

taken together, could be looked on as indicative of cavitation.

Persistent moist râles over a limited area at the outer zone of the pulmonic field, heard on ordinary breathing without any other adventitious sounds, are strongly suggestive of a silent cavity and should always be checked up by roentgenology; of more significance as to possibility of cavernum are bronchovesicular breath-

Fig. 4.—Before pneumothorax: Cavity is in the third space of right hemithorax; its walls are ragged and ill defined.

ing, or harsh inspiratory breath sound with moist bubbling râles, more abundant on inspiration, heard over a limited area in any zone of the pulmonary field. When a patient gives a history of a stormy course of short duration, and on examination one finds moist râles in both respiratory phases heard over a limited area below the second rib, a cavity in a lesion of the exudative type is to be suspected.

According to Lydtin,[2] any of the following signs might be considered as those of cavitation: bronchial, bronchovesicular, sighing expiration sound, and all kinds of râles. This statement is too broad, and cannot be agreed with entirely. It seems, however, that the limitation of these signs to a small area in the pulmonic field, except in the apex, is suggestive of a cavity.

These facts should be kept in mind when one is examining the chest, and roentgenologic examinations are to be made as frequently as possible to corroborate the observations, since they might lead to a more definite evaluation of the physical signs and a more exact interpretation of their meaning. One point to be emphasized is that the absence of all classic signs of cavitation does not exclude the presence of a cavity, and no single sign is so important as the total sum of observations and their proper correlation.

The prognosis of such cavities should never be made from physical signs alone; nor should it be told from the roentgenogram alone, but a joint corroberation of the entire semeiology and roentgenology is essential. Cavities which on examination are revealed by moist râles, bronchovesicular breathing or deep inspiratory breath sound, and roentgenologically show a ragged and ill defined capsule, have as a rule a poor prognosis. Cavities even with a well defined capsule but with frequent fluid levels and with changeable physical signs are also of an unfavorable prognosis; the walls of such cavities are constantly moist, secreting mucopurulent material which at times plugs up the afferent bronchus, and hence the changes in auscultatory physical signs ensue.

It has been stated by many phthisiologists that a cavity is a sign of immunity to tuberculosis. This might be true only of the dry cavity with smooth and fibrosed walls, which means a well walled off lesion. A favorable course was noticed in those cases particularly which on auscultation gave no signs whatever, but roentgenologically exhibited thickened, well defined capsules of the cavity. The impression was gained that small, absolutely mute cavities were of a much more favorable prognosis than the relatively silent ones, irrespective of their location in the pulmonic field.

CONCLUSIONS

1. About half of all pulmonary cavities in tuberculosis are silent; i. e., they lack all the classic signs of cavitation as given in any standard textbook on physical diagnosis.

2. These silent cavities are of at least two kinds; (*a*) absolutely mute, that is, those which exhibit no adventitious breath sounds at all, and (*b*) relatively silent, that is such cavities that lack the classic cavernous signs, but manifest other adventitious sounds such as bronchovesicular breathing and moist râles.

3. Many factors are no doubt responsible for the variable signs of these cavities, the most important of which are: obstruction of the afferent bronchus by fibrosis or mucopurulent material, soft ragged capsules which fail to respond to the vibrations of the inrushing air, changes in medium of conduction of the breath sound produced by surrounding pneumothorax, and emphysema.

4. Physical observations should always be corroborated with roentgenology, as this is the surest way of

Fig. 5.—After pneumothorax (same case as in figure 4): The cavity is compressed, it is displaced downward, and its walls stand out saliently.

diagnosing these so-called silent cavities. There is, as yet, no single sign which could be considered pathognomonic for such cavities, but a certain group of signs taken collectively speak strongly of the presence of cavitation. Bronchovesicular breathing, or harsh inspiratory sound with moist bubbling râles over a limited area in any zone of the pulmonic field below the second rib is very suggestive of a cavity.

5. The prognosis of these cavities varies; the small, absolutely mute cavities are of a much more favorable prognosis than the relatively silent cavities with changeable physical signs. When the patient gives a history of a stormy course of short duration and a relatively silent cavity with ragged capsule is found, it bespeaks a poor prognosis. Frequent roentgenoscopic observations plus repeated physical examinations of the chest are necessary in order to formulate a correct prognosis.

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Clinical Notes, Suggestions and New Instruments

A NEW SPHYGMOMANOMETER

J. L. WILSON, M.D., AND H. N. EATON, A.M., NEW YORK

A new mercurial sphygmomanometer in which several important and well established objections to this type of blood pressure instrument have been overcome has been developed recently. Its novel design reduces the possibility of accidental breakage of the glass tube practically to the vanishing point, while in the exceptional event of the tube breaking, a new one may quickly be inserted without the use of any tools and without sacrifice of accuracy in the readings of the instrument. Hence it is not necessary for the manometer to be returned to the manufacturer on account of glass breakage, with a resultant loss of its service for several weeks or longer. Furthermore, since the straight manometer tube can be easily removed, it is possible to clean it thoroughly whenever desired.

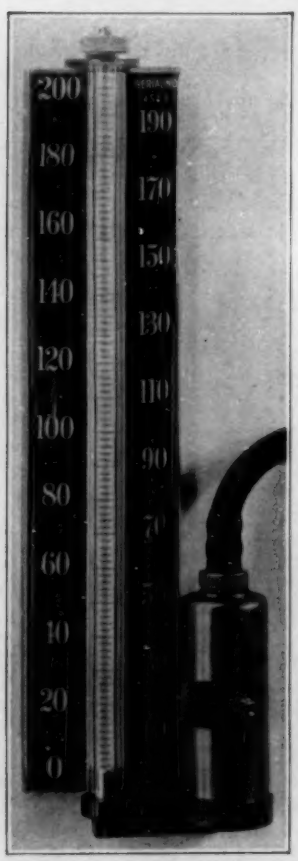

Fig. 1.—New sphygmomanometer.

The graduated leg of the manometer consists of a straight piece of specially selected glass tubing having its ends ground smooth and true to fit the steel sockets in which it is mounted. With the instrument placed on its right side, the top socket is moved out of engagement with the top end of the tube, which can then be removed (fig. 2). The bottom socket engages the lower end of the tube and forms one side of a base connection, the opposite side of which comprises a larger socket which accommodates the steel reservoir.

The fact that this reservoir is made of steel is not in itself new or original, since blood pressure instruments having such reservoirs were common twenty years ago, and are pictured and described in Janeway's[1] classic work on blood pressure. In this instrument, however, each steel reservoir is made with the highest accuracy of the same uniform diameter. In this way, the number of variables affecting the spacing of the scale graduations is reduced to a single one—the unavoidable variation in the bore of the glass tube. Hence it follows that, since the reservoirs are all exactly alike and since each tube is individually calibrated against one of these standard reservoirs, any tube can be used in combination with any reservoir. Thus, the glass tubes are interchangeable and the insertion of a new tube does not impair the accuracy of the instrument in the slightest degree.

The reservoir possesses the further practical advantage that it can be quickly removed, cleaned and replaced, without the use of any tools.

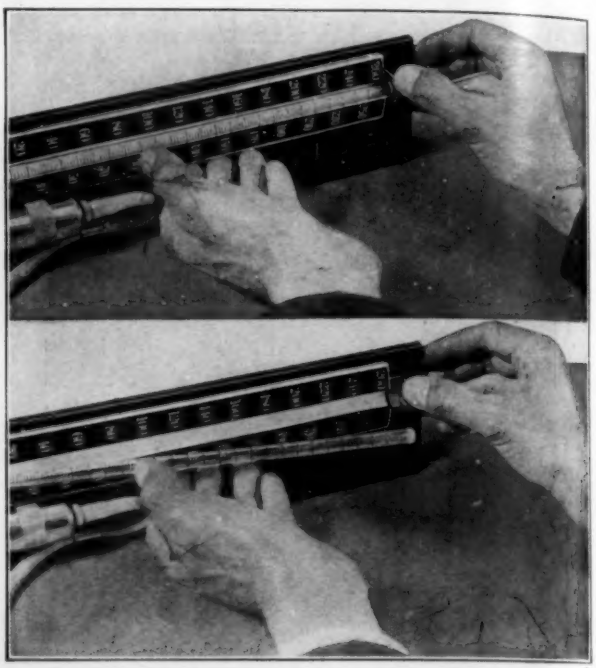

Fig. 2.—Manner of removing tube: The instrument is placed on its right side, as in the upper illustration; then, as shown in the lower illustration, the top socket is moved out, disengaging the upper end of the tube, which drops into the waiting hand. The tube is replaced by reversing the process.

Several features of the design account for the almost complete elimination of glass breakage. In the first place, the straight glass tube with sturdy walls represents the utmost attainable simplicity and strength. The smoothly ground ends of the tube and the cork-faced surfaces against which they bear are all accurately parallel, which insures that the force holding the tube in assembly shall be a uniformly distributed pressure—and glass is strong in compression. There are no bends in the tube to introduce the bending stresses that make glass so fragile.

The tube is held in a resilient mounting which permits it to yield considerably to side and end thrusts and thus to withstand, without damage, shocks that would otherwise shatter it. The effectiveness of this unique mounting in absorbing the hardest jolts and jars, and thus protecting the glass tube from breakage, has been demonstrated. A completely assembled instrument was repeatedly dropped in all positions from a height of 4 feet on to a hard floor, without injury to the tube in any instance. As might be expected, however, the wooden case was badly damaged by this abuse, and it can easily be imagined what would have been the effect on a cemented or otherwise rigidly mounted tube.

The almost complete elimination of glass breakage, and the simple means for making a repair in the rare case in which breakage does occur, removes a most exasperating difficulty heretofore experienced with mercurial sphygmomanometers.[2] It is perhaps not so much a question of the cost of the needed repairs as it is the trouble and annoyance of having to pack up and return the instrument to the factory, with the incidental loss of its use while being repaired, which has been the most objectionable feature. In this instrument, such repairs—

1. Janeway, T. C.: The Clinical Study of Blood Pressure, New York, D. Appleton & Co., 1904.

2. Wilson, J. L., and Eaton, H. N.: Sphygmomanometers, Aeronautical Instruments Circular 51, U. S. National Bureau of Standards, 1921.

if they should become necessary—can be made quickly and easily by the user himself.

The instrument possesses the further advantage that it is easy to read. Since the graduations are etched into the glass tube, instead of being placed on a separate scale beside or in back of the tube, parallax errors are eliminated. The scale (or, more accurately speaking, the number plate) is carefully designed from the standpoint of visibility. The tube is set back in a long groove extending down the center of the number plate from end to end, so that the numbers corresponding to the graduations on the tube are approximately in the same vertical plane as the graduations, requiring less accommodation of the eyes than when the numbers lie in a plane back of the tube. The surface of the number plate is ebony black with white numerals, and the white, grooved background contrasts excellently with the silver gray mercury column.

The design of the instrument shown (made by the W. A. Baum Company, New York) was developed along the lines of maximum service and convenience to the user, without the sacrifice of simplicity and ruggedness, which experience has shown to be so desirable in instruments of this character.

ACUTE POLIOMYELITIS IN A CASE OF PROGRESSIVE MUSCULAR DYSTROPHY

L. E. DANIELS, M.D., COLUMBIA FALLS, MONT.

Progressive muscular dystrophy, or pseudohypertrophic muscular paralysis, is not so rare as many physicians believe. In three years' time I have seen two examples of this condition in a limited country practice. One case, in a man aged 20, of the juvenile type was quite typical and showed nothing not mentioned in the recent article by Lewin.[1]

The second case is interesting because of the appearance of another condition. A boy, aged 6 years, was brought to me, June 8, 1926, for the removal of a foreign body from his leg. Noting his peculiar gait, I obtained the following history from his mother. He was born after a rather prolonged labor and weighed 12 pounds (5.4 Kg.) at birth. He developed normally as a baby but was slow in learning to walk, taking his first steps at 16 months and walking alone at 20 months. A peculiar wobbling gait and difficulty in changing from a reclining to a sitting position were noticed by his parents from the beginning. He was unable to rise on his feet without help until the age of 30 months, when he learned to bring himself into position on all fours and then "climb up his legs" with the aid of his hands. Since this time he had shown no particular improvement in walking, had had difficulty in mounting steps, and had a tendency to fall frequently. This condition was not preceded by an acute febrile illness. Other children in the family were healthy, and there was no history of a similar case in any of the relatives.

In general appearance the boy was rather heavily built, with a marked lordosis, protuberant abdomen and unusually well developed legs, the calves being especially prominent. His height was 42⅜ inches (108 cm.), and he weighed 44 pounds (20 Kg.). The features were heavy and dull, although he appeared to possess normal intelligence. There was a concomitant squint, but the other eye conditions, including the fundi, were normal. The right testis had not descended. When the patient reclined, the feet tended to assume a position of equinus. The legs were swung forward in walking, the feet being raised only a short distance from the ground. While the gait had a peculiar rocking character, the characteristic waddle was lacking. The patellar, Achilles, plantar and left cremasteric reflexes were present and normal. No particular weakness or other change could be demonstrated in the shoulder girdle and arm muscles, although the inferior scapular angles seemed a trifle prominent. Biceps, triceps and radial periosteal reflexes were present and normal. The abdominal reflexes could not be obtained.

August 3, the boy was taken sick rather suddenly with high fever, headache, stiffness of the neck and constipation. He was very irritable and complained of pain in his arms and legs. On the evening of the day following, as the fever was subsiding, it was noticed that the patient could only partially raise his right arm. The next day he was out of bed and playing, but the right arm was useless. He was brought to my office, August 6; he was afebrile, but there was evidence of an acute pharyngitis with a mucopurulent discharge. There was an apparent flaccid paralysis involving all of the right shoulder girdle muscles (with the exception of the trapezius), the flexors and extensors of the arm and forearm, and the interossei. Supination of the forearm was very weak, but pronation was retained, as were also flexion and extension of the hand and fingers with the exception of the action of the interossei. The reflexes of the parts involved were abolished. Since this time there has been a questionable return of power in the triceps group, but the involved muscles have generally showed a progressive atrophy. For two weeks following the onset of paralysis the boy was unable to get up from the floor without help, after which time he managed to climb up his legs with the aid of his left arm alone.

This case is evidently one of pseudohypertrophic muscular paralysis of the infantile type, during the course of which an attack of acute anterior poliomyelitis has occurred. As far as I know there were no other cases of the latter disease in this part of the state at the time this boy was stricken, although there were several cases of acute upper respiratory infection in his immediate neighborhood.

1. Lewin, Philip: Psuedohypertrophic Muscular Paralysis, J. A. M. A. 87:399 (Aug. 7) 1926.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

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Actions and Uses.—See Ovary, New and Nonofficial Remedies, 1926, p. 269.

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PROTEIN EXTRACTS-MULFORD.—(See New and Nonofficial Remedies, 1926, p. 36).

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SATURDAY, NOVEMBER 20, 1926

THE VALVES OF HEISTER

The study of the functions of the gallbladder and its appendages has attained a conspicuous prominence in the last few years. The physiology of the bile is not yet a closed chapter, and consideration of hepatic performance and bile secretion is inadequate without some regard to the biliary paths. The latter, furthermore, are frequently the seat of pathologic manifestations that sometimes require surgical intervention. The internist and the surgeon therefore cannot avoid giving earnest consideration to the problems represented by the foregoing circumstances. Much of the earlier experimental work on the liver and biliary tracts has been inadequate, if not actually misleading. Indeed, a recent reviewer [1] of the subject has found his justification not so much in what is actually known concerning the functions of the gallbladder as in what has been imagined concerning its functions.

One of the newer efforts to "separate fact from fancy" concerns the valvular arrangement of the mucous membrane of the cystic duct, described nearly two centuries ago by Laurentius Heister and often bearing his name in the literature of the subject. Heister believed that the folds in question, which reach their highest development in the human species, function as valves. According to Mann,[1] muscle fibers have been noted in these folds and they have been believed to be under nervous control. Their purpose has been assumed to be to prevent the entrance of bile into the gallbladder, or its exit from the gallbladder, depending on the point of view of the observer. They are not found in all species of animals.

According to the latest student [2] of the valves of Heister, they are essentially projections of the mucosa at the outlet of the gallbladder arranged in a valvular manner. The epithelium is of the same tall columnar type, arranged in rugae of delicate branching forms, identical with those comprising the gallbladder mucosa. The membrane of the cystic duct is similar to that of the gallbladder and the common duct, less intricate than the former and more delicate than the latter. Its structure suggests a functional activity similar to that of the gallbladder; indeed, it is not difficult, Mentzer adds, to believe that the mucosa of the cystic duct may be able to absorb fluids and probably lipoids almost as readily as the mucosa of the gallbladder.

The classic views have been that the valves of Heister are placed in the cystic duct for the purpose of storing bile in the gallbladder until such time as the body needs it. The valves are conceived to function in preventing egress of the bile. Mentzer's study of necropsy specimens showed that solutions pass in either direction through the cystic duct with equal facility. He argues that the functional activities of the valves of Heister cannot be important, since the majority of animals do not possess the valves or their functional equivalent. Moreover, eight normal gallbladder specimens from human beings examined at necropsy were without leaflets or indications of their having existed. Mentzer himself suggests that the valves of Heister check the rapid passage of bile into or out of the gallbladder, presumably so that bile in the gallbladder may remain at a relatively uniform consistency. Perhaps this conclusion also still remains within the realm of fancy, so that the valves of Heister need not be considered of major importance with regard to the general physiology of the gallbladder.

1. Mann, F. C.: The Functions of the Gallbladder, Physiol. Rev. **4**: 251 (April) 1924.
2. Mentzer, S. H.: The Valves of Heister, Arch. Surg. **13**: 511 (Oct.) 1926.

ACID MILK AND RICKETS

Since the study of rickets has been approached by the path of chemical examination of the affected organism, a number of distinctive factors have been ascertained. It has been made clear that the defective calcification of the bones in rickets is associated with a diminished concentration of the inorganic phosphorus or the calcium of the serum. As has been pointed out,[1] certain cases show only a low inorganic phosphorus content, and this is the rule in uncomplicated rickets; other cases show only a low concentration of calcium, the condition usually found when rickets is complicated by tetany; while still others may be associated with diminished concentrations of both these elements. Howland and Kramer [2] have assumed that when the product of the calcium and phosphate concentrations in the serum is below a certain figure, active rickets is found, and that when the product rises somewhat above this, healing results, with the deposition of calcium phosphate in the bones. One may therefore conclude that the rachitic bone remains uncalcified just so long as the bone-forming elements, calcium and phosphorus, are supplied to it in such low concentrations that precipitation of calcium phosphate cannot take place.

1. Orr, W. J.; Holt, L. E., Jr.; Wilkins, L., and Boone, F. H.: The Calcium and Phosphorus Metabolism in Rickets, with Special Reference to Ultraviolet Ray Therapy, Am. J. Dis. Child. **26**: 362 (Oct.) 1923.
2. Howland, John; and Kramer, Benjamin: Monatschr. f. Kinderh. **25**: 279, 1923.

It is conceivable that deficiency of calcium or phosphorus in the blood plasma is due either to an inadequate supply of one or both of these elements in the diet, or to any impairment of the process of absorption from the intestine. Metabolism studies[1] in the Department of Pediatrics at the Johns Hopkins University have demonstrated that infants with active rickets fail to retain calcium and phosphorus, although an adequate amount is present in the diet. Those agencies that are curative, notably cod liver oil and certain forms of radiant energy, cause large amounts of calcium and phosphorus to be retained in the body. Increased amounts of these elements are found in the urine after ultraviolet irradiation, indicating an increased absorption from the intestine. It is therefore argued that the defective absorption from the intestine found in active rickets is the cause of the low concentrations of calcium and phosphorus found in the serum, and is the ultimate cause of the defective calcification of the bones.

Proceeding on this assumption, attempts have been made to promote the "mobilization" of the requisite inorganic elements in other ways. At St. Mary's Hospital in San Francisco, Flood[3] has investigated the effect of so-called hydrochloric acid milk. Determinations of the mineral balance indicate that this food favors the absorption of calcium in the rachitic infant but has little effect on the calcium retention of the normal baby. Flood believes that hydrochloric acid milk has some prophylactic action against rickets during the first year, as it insures a high constant calcium absorption during this time. He considers it valuable in several respects. Because of the low buffer value of the acid milk, it can apparently be fed with a higher content of fat in addition to promoting calcium absorption. This is not merely an advantage from the standpoint of the energy intake: the fats are the carriers of vitamins that are indispensable in the growth period. Furthermore, Flood argues that in most acute or chronic infections there is a reduction of the hydrochloric acid secretory power of the stomach. Infants suffering from chronic infections, such as pyelitis and colitis, are especially prone to rickets. These infants experience a moderate hypochlorhydria during the course of their infection, with the result that they do not have sufficient hydrochloric acid to saturate the buffers and convert the insoluble calcium salts. This they can accomplish with acidified milk, which insures them a sufficient calcium absorption during their illness. The pendulum of enthusiasm for the acidified milks that have found vogue during the last decade has swung back and forth. It is still worth while to consider the various claims that they have for recognition, either as routine foods or in the management of special conditions such as have here been referred to.

3. Flood, R. G.: Calcium Balance with Hydrochloric Acid Milk, Am. J. Dis. Child. **32**: 550 (O t.) 1926.

RICKETTSIAE AND DISEASE

Development of our knowledge of insect-borne diseases has led to the conquest of yellow fever, the control of malaria, and the prospect of a successful attack on a diverse group of serious maladies that have in common the transmission of the infective agent through some species of insect. With the progress of investigation it is becoming evident that the causative organisms transmitted by arthropods are by no means related in character. Many of them have in common only a small size and a parasitic nature that enable them to persist in both the insect and the human hosts. The incriminated disease-provoking species include protozoa such as the blood-inhabiting type found in malaria and blackwater fever; adult and larval nematode worms seen in filariasis of divergent sorts; the spirochetal micro-organisms of yellow fever; the trypanosomes of trypanosomiasis and Chagas disease, and the less well defined microbial forms now designated as rickettsiae.

Rickettsia is a generic term, selected in memory of Howard Taylor Ricketts, who lost his life in the study of the insect-borne disease typhus. The term was originally applied to certain small micro-organisms that occur in lice, but of late it has been proposed to restrict the name rickettsia to bacterium-like micro-organisms having slight affinity for aniline dyes, exhibiting pleomorphism, and having an intracellular habitat. Organisms of this sort are presumably by no means always pathogenic. Their gram-negative character and small size, usually less than half a micron in diameter, involving a ready confusion with other cell inclusions, has made the investigation and determination of the rickettsiae singularly difficult.

In a significant review of the research of the passing decade in relation to the rickettsiae, Cowdry[1] of the Rockefeller Institute for Medical Research ventures to associate the cause of five insect-borne diseases with these microbic forms. As he summarizes the indications, there is strong evidence that typhus fever, Rocky Mountain spotted fever, and heartwater disease are caused by rickettsiae. It is highly probable that *R. quintana* is the etiologic agent of trench fever. The relation of *R. nipponica* and of the "microcorpuscles" of Nagayo to tsutsugamuchi disease remains very ill defined, but there are many points concerning the virus, its mode of transmission and the distinctive lesions of the disease which indicate the likelihood that it is produced by some form of rickettsia. Cowdry regards it as conceivable that the properties of these pathogenic rickettsiae may be subject to variation, several strains existing, as is the case with some bacteria. There are many species of nonpathogenic rickettsiae. Cowdry's forecast will interest students of the etiology of disease; for he concludes that since investigations extending over a period as short as ten years have revealed such

1. Cowdry, E. V. Rickettsiae and Disease, Arch. Path. & Lab. Med. **2**: 59 (July) 1926.

a definite and far-reaching relation between rickettsiae and disease, we may reasonably expect that within another decade our knowledge along these lines will be considerably augmented. At present, he adds, we seem to be in a state of transition from an approach which is predominantly cytologic to cultural and serologic methods of study. The cytologic element consists chiefly of the identification within the distinctive lesions of uncultivable organisms which are so tiny, which stain so faintly, and which are present in such small numbers, even under the most favorable conditions, as to make their discovery difficult. Lest we forget, it should be recalled that many physicians, nurses and investigators have been martyrs in attempts to increase our knowledge of disease in which rickettsiae are involved. We may mention Ricketts, von Prowazek, Bacot, Conneff, Cornet, Jochmann, Luthje, Schüssler and Weil.

EXPERIMENTAL SCARLET FEVER AND SUSCEPTIBILITY TESTS

Nicolle, Conseil and Durand,[1] in Tunis, have recently described the development of scarlet fever—with characteristic fever, angina, glossitis, eruption and desquamation—in a person inoculated with the fourth subculture of a streptococcus isolated from the throat of a scarlet fever patient. This streptococcus was hemolytic, did not ferment mannitol, and produced a toxin demonstrable by skin tests with the culture filtrates. Furthermore, the person inoculated had previously shown susceptibility to scarlet fever toxin by a positive reaction (local erythema and slight rise of temperature) to an intradermal injection of unfiltered urine from the scarlet fever patient. Other persons were tested with the urine, and two who gave positive reactions to filtered urine were later proved susceptible to scarlet fever.

This work, regarded by the authors as confirmatory of the discovery by the Dicks[2] that a specific streptococcus is the cause of scarlet fever, emphasizes also the value of their later disclosure[3] of the intradermal injection of streptococcus toxin, the "Dick test," as a means of determining susceptibility and nonsusceptibility to scarlet fever. It is of interest that not only the Dicks but also Nicolle and Conseil failed in earlier attempts to produce scarlet fever by inoculations with streptococci from scarlet fever patients, possibly because there was no way to insure the selection of susceptible volunteers. The skin test with properly standardized toxin[4] is, in general, positive in the susceptible; is negative in the nonsusceptible person, in the scarlet fever convalescent, and in persons immunized by repeated doses of toxin; and is neutralized by both human convalescent serum and specific streptococcus antitoxic horse serum. It thus affords a quantitative basis for the use of both toxin and antitoxin; serves as a guide in the immune prevention and therapy of scarlet fever by indicating changes from the original susceptibility; and, conversely, in the use of unknown filtrates in a known susceptible person, aids in the identification of toxin-producing scarlet fever streptococci. The use of urine for the susceptibility test recalls Trask and Blake's[5] demonstration of toxin in the serum and urine of scarlet fever patients by skin tests on persons whose serum did not cause blanching of the scarlet fever rash (negative extinction test). In persons whose serum did cause blanching of the rash, the injections caused no reactions and such serum also neutralized the toxic fluids when mixed before injections into otherwise reactive persons.

A growing confidence in the experimental work on scarlet fever, with a fuller appreciation of its significance in preventive medicine, is justified by the correspondence, in the skin reactions to toxins, of specific streptococcus cultures and of the fluids of scarlet fever patients; the demonstrated neutralization of toxins from both sources by human convalescent serum, by positive blanching serums, and by antitoxic horse serums; the consistent relation of the susceptibility to streptococcus toxin as shown by skin tests and the susceptibility to scarlet fever itself, together with the repeated production of scarlet fever by inoculation of susceptible persons with *Streptococcus scarlatinae*.

Current Comment

GLYCURONIC ACID IN THE DEFENSE AGAINST POISONS

As a means of defense against harmful agents, the body avails itself of numerous devices. Some of these are conspicuously physiologic, as in the rapid elimination of certain offensive products by means of vomiting and diarrhea. Sometimes fixation of poisons by deposition in an insoluble form in certain tissues takes place. In other instances the protective reactions are more immediately chemical; thus, neutralization, oxidation, reduction and digestive hydrolysis may destroy harmful materials. Conjugation of harmful substances, either unchanged or after oxidation, with sulphuric acid has long been familiar as a mode of elimination of phenol and cresols, indole and skatole. Poisonous compounds are thereby converted into relatively harmless ones that are readily soluble and eliminated. Glycuronic acid, which represents a first step in the oxidation of glucose, also functions as a "detoxicant" by combining in the metabolism with such substances as aromatic alcohols or phenols, naphthol, thymol, camphor and chloral hydrate. The extent to which glycuronates are formed and

1. Nicolle, C.; Conseil, E., and Durand, P.: Recherches expérimentales sur la scarlatine, Arch. de l'Inst. Pasteur (Tunis) **15**: 229 (Sept.) 1926.
2. Dick, G. F., and Dick, Gladys H.: Experimental Scarlet Fever, J. A. M. A. **81**: 1166 (Oct. 6) 1923.
3. Dick, G. F., and Dick, Gladys H.: A Skin Test for Susceptibility to Scarlet Fever, J. A. M. A. **82**: 265 (Jan. 26) 1924.
4. Dick, G. F., and Dick, Gladys H.: Results with the Skin Test for Susceptibility to Scarlet Fever: Preventive Immunization with Scarlet Fever Toxin, J. A. M. A. **84**: 1477 (May 16) 1925.
5. Trask, J. D., Jr., and Blake, F. G.: Observations on the Presence of a Toxic Substance in the Blood and Urine of Patients with Scarlet Fever, J. Exper. Med. **40**: 381 (Sept.) 1924.

excreted in this fashion has received increased recognition and emphasis of late. Quick [1] formulates as most commonly accepted the view that glycuronic acid is produced only in response to the presence of certain types of aliphatic and aromatic compounds which contain either a hydroxyl group, or a radical which can in the body be either reduced or oxidized to an alcohol or a phenol. Its synthesis is therefore looked on as the product of a detoxication mechanism rather than an intermediary compound in carbohydrate metabolism. In fact, some investigators do not even believe that glycuronic acid is derived from a carbohydrate precursor. There are conditions in which the availability of sugar in the body is greatly decreased, notably in pancreatic diabetes. In his studies at the University of Pennsylvania, Quick has demonstrated that diabetic organisms can still produce glycuronic acid in liberal amounts, so that this protective device is apparently not impaired. The production of glycuronic acid, he has found, is accompanied in the diabetic patient by a corresponding decrease in the urinary sugar, indicating that glycuronic acid and glucose have the same precursor; and that, when there is a demand on the organism for glycuronic acid, it is produced at the expense of the potential glucose. Since the glucose produced in total diabetes during fasting is generally believed to be solely derived from protein, Quick concludes that the diabetic organism can still utilize that portion of the protein molecule which ordinarily goes to glucose for the synthesis of glycuronic acid. Evidently the defensive mechanisms of the body are well maintained even under some conditions of severe metabolic upset.

HEREDITARY TENDENCY TO FRACTURE

Hereditary defects are familiar in varied guises to physicians. There are structural peculiarities that persist through more than one generation. Brachydactylia, or short fingers, and albinism afford cogent illustrations. Mental instability often is notably transmitted, as in congenital imbecility. Of late, recognition has been given to certain inborn errors of metabolism that represent anomalies in the chemical reactions of the body. Alkaptonuria, cystinuria and pentosuria, persisting through generations by recognized mendelian inheritance, bear evidence of such peculiarities.[2] For several years the hereditary nature of the symptom complex of brittle bones and blue sclera has been established, hereditary deafness having been recognized as an added feature of the syndrome. The investigations of Key [3] at the Washington University School of Medicine, St. Louis, throw a somewhat novel light on the pathology of the condition. They indicate that this idiopathic fragility of bones is due to an abnormality in development rather than to a metabolic disturbance. This is established by an examination of the bony structures. Key postulates a hypoplasia of the mesenchyme. Other tissues are apparently not comparably affected. Such hereditary hypoplasia probably involves all the collagenous tissues, thus explaining the recognized friability of the blood vessels, fascia, periosteum and subcutaneous tissues. The hereditary hypoplasia of the mesenchyme is in no way related to any of the acquired forms of bone fragility. It is pointed out by Key that the blue appearance of the sclera is not due to a deposit of pigment but is attributable to an abnormal translucence of the fibrous tissue which permits a shining through of the deeper tissues. From observations on the fascia and tendons it is probable that the sclera is thinner than normal and is of an abnormal quality. Other coincident abnormalities—short stature, hypermobility of joints, and deafness—can also be interpreted in the light of the peculiarities of mesenchymal tissue development. The hereditary hypoplasia of the mesenchyme now deserves to be recognized as a well defined disease entity.

1. Quick, A. J.: The Production of Conjugated Glycuronic Acids in Depancreatized Dogs, J. Biol. Chem. **70**: 59 (Sept.) 1926.
2. Garrod, A. E.: Inborn Errors of Metabolism.
3. Key, J. A.: Brittle Bones and Blue Sclera, Arch. Surg. **13**: 523 (Oct.) 1926.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Arizona Admitted to Registration Area.—The October bulletin of the state board of health notes that Arizona has been admitted to the U. S. registration area for births and deaths. The recent check made by representatives of the government showed that the vital statistics bureau of the state was registering more than 90 per cent of its births and deaths.

CALIFORNIA

Epidemic of "Jaundice."—There had been 165 cases of "jaundice" reported to the San Diego Department of Health between October 1 and October 29, it is said, the last seventeen cases being reported in one day. An investigation was being made to determine the source of the outbreak, which was said to be not confined to any particular part of the city; more than half of the cases affected persons between 10 and 19 years of age.

DISTRICT OF COLUMBIA

Personal.—Dr. Joanna Lyons left, October 23, for Rawal, India, to take charge of St. Catherine's Hospital for Women and Children, which, for the last three and one-half years, has been under the direction of Dr. Anna Dengel.——Dr. Harry E. Mereness, Jr., who for several months was prison physician at Fort Leavenworth, was relieved, September 8, and has returned to his former work as inspector of prisons in the office of the superintendent of prisons, Washington, D. C.

FLORIDA

Personal.—Dr. Elliott M. Hendricks has been appointed superintendent of the Edwards Hospital, Fort Lauderdale, to succeed Dr. Russell R. Hippensteel.——Dr. Archie McCallister has been appointed city health physician of Tarpon Springs.

Hospital News.—Drs. Robert F. McLeod and Robert D. Ferguson have opened a twelve bed hospital at Titusville, which is the first hospital in Brevard County.——Dr. Robert L. Hughes has resigned as manager of the Polk County Hospital and Dr. Julian L. Hargrove appointed to that position.

Health Pictures for Rural Communities.—The health officer of Polk County, Dr. William M. Bevis, Bartow, arranged for the showing of health and sanitation films and for public health exhibitions during the month of October in forty-eight rural schools; he had a large truck equipped with the necessary power, light and machinery for showing films. The total attendance at these exhibitions in the various rural

school houses was 5,407 persons. Plans have been made to make a similar tour of the colored schools of the county at a later date.

GEORGIA

Hospital News.—Drs. Frank Bird and Joyce F. Mixson, Valdosta, are constructing a new private hospital.——The addition to the Little-Griffin Hospital, Valdosta, which is nearly completed, will increase the capacity of the hospital about 50 per cent.

Medical Buildings in Atlanta.—The Fulton County Medical Society, Atlanta, has owned the smaller building at the right since 1922. Here, in the academy of medicine, it has a library of about 2,000 volumes and receives about twenty-five medical journals. Here also is an auditorium with a capacity of 250, and here the society meetings are held. There is a secretary-librarian on duty who supplies information concerning medical activities throughout the city. There is a home atmosphere about the academy; visitors are always welcome. The secretary of the county society writes that "there cannot be a more inspiring sight than that of our auditorium filled with interested listeners to some medical discussion." On other occasions, the building is lighted from top to bottom, automobiles are parked from Pine and Peachtree streets to Lindon and within there is music and laughter. The members then are the guests of the women's auxiliary and the anxieties of the day are set aside. The building thus brings to its members the pleasantest thoughts and associations along with those of the more serious work. The new medical arts building in Atlanta, which will be opened December 1, will be occupied largely by members of the Fulton County Medical Society and the Fifth District Dental Society. It is a twelve story, fireproof building, located at Forrest and Peachtree Street; on the ground floor will be a prescription shop, surgical and dental supply houses, a dispensing optician and a bank. Plans are being made for an auditorium or a library, and a recreation hall. A three story fireproof garage with space for 150 cars will be connected with the medical arts building by corridors. More than 75 per cent of the space in the building has been leased. The dental and medical professions have cooperated fully in making this project a success.

Academy of Medicine.

Medical Arts Building.

ILLINOIS

Society News.—Dr. Gustaff H. Mundt, Chicago, president-elect of the Chicago Medical Society, gave an address at Shelbyville, October 28, on "Organization in the Seventh District."——Dr. Walter W. Hamburger, Chicago, addressed the Elgin Physicians' Club, November 8, on "The Heart in Thyroid."

Liquor Licenses Revoked.—The district prohibition administrator, with headquarters at Chicago, recently issued orders revoking the liquor licenses of the following for the reasons indicated:

Dr. Franklin W. Eskey, Sterling, failed to keep proper records. Illegally issued prescriptions. Diversion.
Dr. David D. Kirby, Peoria, unlawfully issued prescriptions.
Dr. Charles E. Parker, Sterling, failed to keep proper records. Unlawfully issued prescriptions for intoxicating liquor.

Illinois Trudeau Society.—This society will hold its mid-winter meeting in conjunction with the Peoria Medical Society at the Jefferson Hotel, Peoria, December 16; following a luncheon and business meeting, there will be a clinical program on which will appear Drs. Carl A. Hedblom, Chicago, Jacob J. Singer, St. Louis, Stuart Pritchard, Battle Creek, Mich., Clarence L. Wheaton, Chicago, Newell C. Gilbert, Chicago, Edwin P. Sloan, Bloomington, and Robert H. Hayes, Chicago. At the dinner in the evening, the speakers will be Dr. Alfred Henry, Indianapolis, and Dr. John R. Neal, Springfield.

Conference of Health Officers.—The annual Conference of Illinois Health Officers will be held at the State House, Springfield, December 3-4. There will be a joint meeting with the Sangamon County Medical Society, Leland Hotel, Friday evening, and a round table discussion, Friday noon, at the Abraham Lincoln Hotel. Dr. William A. Evans, Chicago, permanent chairman, will open the meeting; Dr. Thomas Parran, Jr., assistant surgeon general, U. S. Public Health Service, will give an address on "Appraisal of City Health Service"; Dr. Walter C. Wilhelmj, East St. Louis, will discuss venereal disease control; Dr. Mather Pfeiffenberger, Alton, president, Illinois State Medical Society, will give an address, and the health officers of various counties and cities of Illinois will read papers.

Chicago

Personal.—Dr. Patrick J. H. Farrell was reelected surgeon general of the Military Order of the World War, at the national convention in Philadelphia, October 9.

Liquor Licenses Revoked.—The local prohibition administrator recently issued orders revoking the liquor licenses of the following for the reasons indicated:

Dr. Liborio Figueroa, failed to keep proper records. Issued prescriptions unlawfully.
Dr. Nettie M. Hurd, failed to keep proper records. Illegally issued prescriptions. Not engaged in permit business at the premises designated in permit.

Dr. H. R. Gross Loses Membership.—Dr. Henry Raymond Gross, who for some time has been connected with the so-called Bureau of Protective Analysis, is no longer a member of the Chicago Medical Society or of the American Medical Association. The Ethical Relations Committee of the Chicago Medical Society recommended, November 9, that he be dropped from membership, and the council concurred in the recommendation.

Society News.—Dr. Carl A. Hedblom, professor and head of the department of surgery, College of Medicine, University of Illinois, will address the North Side Branch, Chicago Medical Society, December 2, Webster Hotel, on "Diagnosis and Treatment of Septic Infections of the Chest." The discussion will be opened by Drs. Tice, Tieken, Bettman, Hayden, E. M. Miller, Pilot, Blatt and C. S. Williamson. There will be a dinner at 7 o'clock; for reservations, telephone Randolph 0244.——Dean Daniels of the Graduate School, University of Illinois, delivered the first lecture of the second medicohistorical series, which is being held in the Quine Library of the College of Medicine, on "Sir Thomas Browne and His Religio Medici."——The Chicago Society of Internal Medicine at its meeting, November 22, at the City Club, will study "Hypocalcemia of Tetany" and "Hypercalcemia of Parathyroid Hormone (Collip)," and among the speakers will be W. C. Austin, Ph.D., and Drs. S. A. Matthews, W. C. Hueper, Solomon Strouse and Herbert F. Binswanger.——The Chicago Urological Society will meet at the John B. Murphy Memorial Building, 44 East Erie Street, November 23. There will be case reports and presentation of specimens. Members are requested to bring interesting material for the meeting. Among others, Dr. Harry C. Rolnick will discuss "An Operation for Sterility in the Male," and Dr. Damon A. Brown, Madison, Wis., "Renal and Ureteral Calculi in Childhood with Case Report" (candidate's thesis).——Donald Van Slyke, Ph.D., Rockefeller Institute for Medical Research, New York, delivered the Seventh Pasteur Lecture at the Institute of Medicine of Chicago, November 19, on "Certain Aspects of the Physical Chemistry of the Blood."

INDIANA

Research in Regulating Traffic.—The Studebaker corporation, South Bend, has given to Harvard University, Boston, the sum of $10,000 a year for two years to defray the expenses of a study into the best methods of regulating street traffic.

Personal.—Dr. Amos J. Hostetler, Lagrange, was appointed a member of the state board of health, November 4, to succeed Dr. Homer C. Haas, who recently resigned. Dr. Hostetler is said to be president of the Twelfth District Medical Society.

Society News.—Dr. Daniel L. Sexton, St. Louis, conducted a clinic before the Tippecanoe County Medical Society at St. Elizabeth's Hospital, Lafayette, November 18, and at the banquet gave an address on "Diagnosis and Treatment of

Ductless Gland Diseases."——At the semiannual meeting of the Eleventh Councilor District Medical Society, October 21, the Miami County Medical Society was awarded the attendance trophy, a silver cup, which, when awarded three times in succession to any county society, becomes its property.

IOWA

Society News.—Dr. Charles W. Pollard, Omaha, addressed the Decatur County Medical Society, Leon, October 13, on "Need of Special Attention During Pregnancy."——At the fall meeting of the Northwest Iowa Medical Society, Sheldon, October 7, Dr. Elmer J. Bild, Doon, was elected president; Dr. George H. Boetel, Rock Rapids, vice president, and Dr. Judson W. Myers, Sheldon, secretary.——Dr. William Engelbach, St. Louis, recently conducted an endocrine clinic before the Austin-Flint Cedar Valley Medical Society, Waterloo, and gave an address on "Endocrinology as Related to Diseases of Other Systems."——The Scott County Medical Society and the Rock Island Medical Society held a joint meeting, November 9, at Davenport; Dr. Robert D. Mussey, Rochester, Minn., spoke on "Laboratory Aids in the Toxemias of Pregnancy," and Dr. Tom B. Throckmorton, Des Moines, on "Points on Differential Diagnosis of Functional and Organic Diseases of the Nervous System."——Dr. Frank M. Tombaugh, Burlington, has been elected president of the Southeastern Iowa Medical Society for the ensuing year, and the next meeting will be at Burlington.

KENTUCKY

Personal.—Drs. Frank T. Fort and Virgil E. Simpson, both of Louisville, were elected orators in surgery and medicine, respectively, at the recent annual meeting of the state medical association, instead of the reverse, as was recently noted.

Postgraduate Course in Obstetrics.—According to the *Kentucky Medical Journal*, the state bureau of maternal and child health has arranged for graduate work in obstetrics and has secured Dr. Alice W. Tallant, for many years professor of obstetrics, Women's Medical College, Philadelphia, to conduct the courses. The demonstrations will include normal and complicated labor, and discussions of prenatal and postpartum care. Sixteen county medical societies have already arranged for this demonstration.

MARYLAND

Cancer Meeting at Hagerstown.—There will be a cancer meeting for the public held at Hagerstown, Tuesday, November 23. Dr. Victor D. Miller, chairman, cancer committee for Washington County, has arranged for short addresses to be made at this meeting by Drs. Lewellys F. Barker, Victor F. Cullen and Joseph C. Bloodgood, all of Baltimore. The Maryland Cancer Committee is attempting to provide public meetings every two or three months in each county; in addition, there is frequently a medical meeting and sometimes a cancer clinic. The newspapers publish the information, several days before the meeting, that there will be a clinic, and that any one who believes that he has cancer may come with his family physician or a letter from him. These cases are diagnosed before the physicians present and the treatment is indicated; if the family physician is not present, the diagnosis and treatment are dictated and mailed to him.

MASSACHUSETTS

Study of Pathogenic Spirochetes.—The Department of Tropical Medicine of Harvard University announces a gift from Mr. Herman A. Metz of New York City for the purpose of furthering the work of the department in its study of spirochetal diseases. Through the gift of Mr. Metz, an additional member has been appointed to the staff of the department for the investigation of the biologic characteristics of some of the less common pathogenic spirochetes.

Society News.—Dr. William J. McDonald addressed the Dorchester Medical Society, November 17, on "Modern Methods of Treatment in Dermatology"; Dr. Robert B. Greenough will speak, December 15, on "Malignancy."——The Essex South District Medical Society was addressed, November 3, by Dr. Robert L. DeNormandie, at the Salem Hospital, on "Toxemias of Pregnancy." The society will meet, December 1, at Beverly Hospital for a clinic and an address by Dr. William J. Mixter on "Diagnosis and Treatment of Cerebral Lesions."——Dr. Rudolph Matas, New Orleans, addressed the Harvard Medical Society, November 2, on "Surgical Treatment of Aneurysm."

Centennial of Eye and Ear Infirmary.—The managers of the Massachusetts Eye and Ear Infirmary issued invitations to a dinner at the Algonquin Club, November 4, in celebration of the centennial of the infirmary. The guests of honor included the governor and lieutenant governor of the state, the president of Harvard University, Dr. Lucien Howe, Buffalo, and Dr. George E. de Schweinitz, Philadelphia, formerly President of the American Medical Association. The infirmary, which is conducting a campaign for $1,500,000, is said to treat on an average of 396 patients a day, and has a staff of more than sixty physicians. The poor receive treatment without charge; the infirmary receives no support from the state and its present income is inadequate. The institution was incorporated in 1827 as the Massachusetts Charitable Eye and Ear Infirmary, and the present building was erected in 1899.

MICHIGAN

Public Health Conference.—The sixth annual public health conference will be held in Lansing, December 1-3, with headquarters at the Michigan Department of Health in the state office building. A cordial invitation is extended to any one interested to attend these sessions. Speakers of national reputation will be on the program.

Fund for Medical Research in Detroit.—At the complimentary dinner tendered to Dr. Angus McLean, a fund for a school of research at the Detroit College of Medicine and Surgery was started. Robert Oakman contributed $25,000 to the fund; Col. Edwin S. George offered to contribute $25,000, provided an endowment of not less than $500,000 was obtained, and Dr. McLean added a gift of $10,000 in memory of Base Hospital No. 17, with which he served in France during the World War.

Health Lectures for the Public.—Under the auspices of the Joint Committee on Public Health Education, 480 health lectures were given in the state during the year 1925-1926, with a total attendance of 84,000. The increase in the number of lectures assigned over the previous year was 45 per cent. At a recent meeting of the joint committee, a bureau of publicity was organized. The committee prepares health articles which are sent out to the daily and weekly papers of the state. A publicity fund was established to be deposited with the treasurer of the university, and to be known as The Joint Committee Publicity Trust Fund.

Postgraduate Conference at Ann Arbor.—The state medical society conducted a postgraduate clinic for its members at the University Hospital, Ann Arbor, November 11-13. There were no fees and no operative work, practical methods and measures being enlarged on and the subjects discussed being enhanced by clinical demonstrations. The days were filled with such demonstrations as methods of preparation of patients, preparation of the field and postoperative care and treatment; practical discussions of medical procedures with demonstrations; psychiatric problems in private practice; management of eye conditions in private practice; prenatal care clinic, and many other subjects; there were demonstrations in the laboratories, outpatient departments and wards of the hospital. At an informal dinner, Thursday evening, short addresses were given by Dr. John B. Jackson, president of the state society; Clarence C. Little, LL.D., president of the university, and Dr. Hugh Cabot, dean of the medical school. There was a general meeting, Friday evening, to which were invited the medical and dental students, the resident physicians of the hospital, nurses and others; Mr. F. White, Detroit *News*, and Dr. Morris Fishbein, Chicago, gave addresses.

MISSOURI

Voters Approve Workmen's Compensation Act.—At the election, November 2, the voters of Missouri approved the workmen's compensation act passed by the general assembly in 1925 by a large majority. The act had been put on the ballot by referendum through the activities of certain persons who opposed its adoption.

Southwest Missouri Medical Association.—The annual meeting of this association was held at Springfield, October 28-29. Among the invited guests were Dr. Jabez N. Jackson, Kansas City, President-Elect, American Medical Association, Dr. William H. Breuer, president, Missouri State Medical Association, and Dr. William F. Rienhoff, Jr., Johns Hopkins Hospital, Baltimore, who spoke on "Relation of Hyperthy-

roidism to the Origin of Certain Benign Tumors of the Thyroid Gland." The Missouri State Medical Association provided speakers for the postgraduate extension course including Dr. Wenzel C. Gayler, St. Louis, "The Newer Obstetrics," and Dr. Ellis Fischel, St. Louis, "Present Status of Radium Therapy."

NEBRASKA

License Revoked.—The state department of public welfare recently revoked the license of Dr. William F. Race, Havelock, who, it was alleged, was a habitual user of narcotics. The department of public welfare also secured the conviction of a Mr. M. Ubs, of Madison, who was practicing without a license. Ubs was fined $100 and costs.

Society News.—The Ainsworth Commercial Club tendered a dinner to the Eighth Councilor District and Holt County medical societies, October 5; among others, Dr. William J. Douglas, Atkinson, spoke on "Periodic Examinations of Apparently Healthy Persons."——About 100 physicians attended the joint meeting of the Third and Seventh Councilor District medical societies, Beatrice, September 29; among others, Dr. Adolph Sachs, Omaha, spoke on "Cardiac Therapy," and Dr. Byron B. Davis, Omaha, "Modern Management of Goiter."——Dr. James E. M. Thomson, Lincoln, addressed the Furnas County Medical Society, Beaver City, October 6, on "Orthopedic Correction of Deformities," illustrated by moving pictures.——Dr. Edwin Davis addressed the Madison County Medical Society, September 7, Norfolk, on "The Treatment of Old Prostatics."——Dr. Arthur C. Morgan, Philadelphia, president-elect, Pennsylvania State Medical Society, addressed the Omaha-Douglas County Medical Society, Omaha, October 26, on "Acute Heart Tragedies," and held clinics at St. Joseph's and University hospitals.

NEW JERSEY

Personal.—Dr. Harry B. Slocum, chief of staff, Monmouth Memorial Hospital, Monmouth, recently celebrated the completion of twenty-five years in the practice of medicine.

Society News.—The library of the late Dr. David C. English, New Brunswick, a past president of and for many years editor for the Medical Society of New Jersey, has been given to the Rutgers University Library.——At the annual meeting of the Atlantic County Medical Society, Hotel Chalfonte, Atlantic City, Dr. William H. Thomas, Philadelphia, spoke on "Chronic Urinary Obstruction," and Dr. Randle C. Rosenberger, Philadelphia, on "Infection of the Heart."——Dr. Louis Carp, New York, addressed the Bergen County Medical Society on "Branchial Anomalies."

Dr. Theobald Smith Awarded Trudeau Medal.—The Trudeau Medal for 1926 of the National Tuberculosis Association was awarded at the annual meeting in Washington to Dr. Theobald Smith, Princeton, director, department of animal pathology, Rockefeller Institute for Medical Research, New York, who in 1896 first distinguished between the bovine and the human bacillus of tuberculosis. Dr. Smith has ever since been a leader in research on tuberculosis. The association awards a gold medal not oftener than once a year to the person who in its judgment has made the most meritorious contribution on the cause, prevention or treatment of tuberculosis during the previous year.

NEW YORK

Personal.—Dr. Lester E. Sanford, who has moved to Kingston, has resigned as health officer of Boonville, and his brother, Dr. Karl T. Sanford, has been appointed to that position.——Dr. Stanton P. Hull, Petersburg, was reelected president of the New York State Sanitary Officers' Association, October 13, and Dr. W. A. Leonard, Cambridge, was elected secretary.

Health at Schenectady.—Telegraphic reports to the U. S. Department of Commerce from sixty-six cities with a total population of about 29,000,000, for the week ending November 6, shows that the lowest mortality rate (6.2) was for Schenectady, and that the mortality rate for the group of cities as a whole was 11.8. The mortality rate for Schenectady for the corresponding week last year was 10.7, and for the group of cities 12.8.

Patient Wins Suit Against Albany.—A jury in the Superior Court at Albany awarded $3,000 damages, October 26, in a suit brought by John Weisner in behalf of his son, who is said to have contracted typhoid by drinking city water in 1924 and to have suffered permanent injury to his health. This was the second trial in this action, the first having resulted in a disagreement. The city announced that it would probably appeal. Thirteen among about 200 patients who contracted typhoid at this time filed suit and now are said to have the right to action.

Nine Thousand Physicians Have Registered.—The secretary of the state board of medical examiners reports that up to October 15 about 9,000 physicians had registered under the new law, and that only one had made a complaint. There are said to be about 7,000 more in the state who should send in applications. The board of medical examiners realize that some physicians entered the state too late to be in the directory, and that many of those who have been licensed since January 1 gave their addresses at hospitals before deciding on a location to practice. Cards have not been sent to these because their addresses are unknown. The board requests physicians who know of such persons to tell them to apply for blanks.

Society News.—Dr. George M. Fisher, president, state medical society, and Dr. Joseph S. Lawrence, executive officer, visited the Herkimer County Medical Society, September 14; Dr. John L. Crofts, Newport, read a paper on "Headaches and Their Causes."——Members of the Delaware County Medical Society were invited to attend a supper in honor of Dr. Ross V. Patterson, dean, Jefferson Medical College, Philadelphia, recently. This society held a meeting, September 7, in the interest of public medical education, and after a dinner, representatives addressed a public meeting in the Opera House on health; Dr. Harris A. Houghton, New York, spoke on the presentation of general diseases; Drs. Ray D. Champlin and Frank W. Laidlaw described what should be done during an epidemic.——Dr. Edmund L. Finley, Oneida, has succeeded Dr. W. W. Osgood, Cazenovia, as president of the Madison County Medical Society for the ensuing year; Dr. Donald H. Conterman, Oneida, was reelected secretary.——Dr. Robert J. Reynolds, Potsdam, has been elected president of the St. Lawrence County Medical Society and Dr. Samuel W. Close, Gouverneur, secretary.——The Bedford Medical Society was organized September 29; Dr. Aaron Roth, 570 Eastern Parkway, was elected president.——Dr. Joseph H. Bainton addressed the Long Island City Medical Society, October 28, on "The Maintenance Dose of Digitalis in Auricular Fibrillation"; Dr. William J. Lavelle was elected president of the society; Dr. James M. Dobbins, vice president, and Dr. Mandel H. Weinstein, secretary-treasurer, reelected.——Dr. Dean Lewis, professor of surgery, Johns Hopkins University Medical School, Baltimore, addressed the Onondaga County Medical Society at the Onondaga Country Club, October 5, on "Bone Tumors," illustrated with lantern slides; about 150 members were present.——At the twentieth annual meeting of the first district branch of the state medical society, Briarcliff Lodge, November 10, Dr. Edward R. Cunniffe, Bronx, was elected president, and Dr. Ralph O. Clock, Pearl River, secretary.

New York City

Hospital News.—The seventy-five bed private hospital owned by the late Dr. William F. Campbell, Brooklyn, was bequeathed by him to Dr. Emil F. Hartung, Dr. John B. Meury and Bernard Rothberg, the trustees of the institution.——Dr. Adam Eberle has been appointed superintendent of the Greenpoint Hospital to succeed the late Dr. Raymond H. G. Laub.

Dr. Whitmore Appointed Medical Director of U. S. Lines.—The general manager of the U. S. Lines announces the appointment of Dr. George B. Whitmore as medical director and active head of the medical department of the company with offices at Pier 4, Hoboken. Dr. Whitmore has been serving aboard ships, it is said, for more than eighteen years, fifteen of which were in the navy, from which he retired in 1922. He was formerly chief surgeon of the U. S. S. *George Washington* and the *Leviathan*.

Baltimore Medical Dinner.—The annual banquet of the Baltimore Medical Club of New York City will be at the Hotel Astor, the date to be arranged for the convenience of Governor Albert C. Ritchie of Maryland, and announced later. The club is made up of physicians in New York and vicinity who graduated from Baltimore medical colleges; Dr. David E. Hoag is now president. Among the speakers at the banquet will be Dr. Wendell C. Phillips, President, American Medical Association, and the Rev. S. Parkes Cadman.

Personal.—Dr. Charles A. Perilli has been appointed a member of the board of trustees of Bellevue and Allied Hospitals to succeed his brother, the late Dr. John W.

Perilli.——Dr. Archibald W. Thomson has been elected president of the Poughkeepsie Academy of Medicine for the ensuing year, and Dr. John H. Cotter, secretary.——Dr. George David Stewart, professor of surgery, University and Bellevue Hospital Medical College, has been named president-elect of the American College of Surgeons; the president for the ensuing year is Dr. Walter W. Chipman, Montreal.

Fifteen Hundred Welfare Agencies Need Large Building.—The Welfare Council of New York City announces a plan for a new $4,000,000 "Community Welfare Building" designed to house all the scattered social service organizations. The United Charities Building, which was adequate when built thirty-six years ago, now provides space for only thirty-five of the 1,500 welfare agencies of the city. Space in the proposed building will be allotted on a basis of $1.50 a square foot, whereas now 178 of these agencies pay an average rental of $1.80 a square foot. Mr. Robert de Forest, president of the council, said that the idea behind the new building is exactly the same as that which was behind the old building when it was first thought of. The executive director said that the value of central housing for social agencies is being recognized in such other cities as Philadelphia, Cincinnati, Detroit, Boston and Minneapolis. It is proposed to meet about one half of the total cost of the building by gifts from public spirited citizens, and the remainder by means of a first mortgage.

OHIO

District Meetings.—A golf tournament was held at the Country Club, Marion, preceding the annual meeting of the Northwestern Ohio District Medical Association, October 11, and memorial services for deceased physicians were conducted at the tomb of the late President Harding. The annual oration at this meeting was delivered by Dr. John B. Deaver, Philadelphia.——Eighty-six physicians attended the annual meeting of the Seventh Councilor District at Uhrichsville, September 23. Among the speakers were Dr. Leora G. Bowers, Dayton, president, Ohio State Medical Association, and Dr. Leslie L. Bigelow, Columbus, president elect; Dr. Emmet B. Shanley, New Philadelphia, was elected president for the coming year.——The twenty-fourth annual meeting of the Ninth Councilor District was held at Wellston, October 7. There was a scientific meeting, and a dinner at which the president and president elect of the Ohio State Medical Association, Drs. Bowers and Bigelow, respectively, were present.

OKLAHOMA

Postgraduate Instruction.—The University of Oklahoma Extension Division has, in recent months, put on three circuits of postgraduate instruction in the central and southern part of the state, and about 400 physicians have registered for these courses, some of them traveling as much as 75 miles to attend the lectures. New circuits in pediatrics are being organized in other sections of the state, and still other courses will be organized as the demand for them become apparent.

PENNSYLVANIA

Society News.—The Woman's Auxiliary of the Allegheny County Medical Society will hold their first social event, December 6, at the William Penn Hotel in the form of a benefit bridge party, the proceeds to be used to buy books for the children's hospital, and to increase its own trust fund. ——Dr. J. Claxton Gittings, professor of pediatrics, University of Pennsylvania School of Medicine, addressed the November meeting of the Lancaster County Medical Society, Lancaster, on "Nutrition of the Growing Child."

Extension Courses at Pittsburgh.—The Allegheny County Medical Society, Pittsburgh, has authorized a series of extension courses for members of the county or state society at a minimum fee. The series will continue from November 17 to February 3 and will comprise courses on neurology (four sessions), limited to not more than ten; dermatology and syphilology (eight sessions), any number up to twenty; pediatrics (four sessions), not more than ten; contagious diseases (four sessions), not more than six, and diseases of the heart.

Philadelphia

Army Night.—The Philadelphia County Medical Society's program, December 8, will include addresses by Merritte W. Ireland, Surgeon General, U. S. Army, Lieut. Col. Joseph F. Siler, Major Glenn I. Jones and Col. Henry C. Fisher, commandant, army medical school; officers of the medical reserve corps are requested to wear uniforms.

Anniversary of Pediatric Society.—At the thirteenth anniversary of the Philadelphia Pediatric Society, November 9, Dr. J. P. Crozer Griffith delivered the Frederick A. Packard Memorial Lecture on "Some Neurotic Disorders in Children." Dr. Griffith, the founder and first president of the pediatric society, was the guest of honor at a dinner at the Rittenhouse Hotel preceding the meeting.

Women's College Plans New Home.—The Women's Medical College of Philadelphia will conduct a campaign during the next eighteen months for $1,500,000 for a new college building and hospital to be erected at the Falls of the Schuylkill at the intersection of Abbottsford Road and Henry Street on a 9½ acre tract. Mrs. James Starr, president of the college, said, it is reported, that the new college will accommodate 200 students and double the present capacity, and that the hospital will eventually have a capacity of 250 beds. About 1,600 women physicians have been graduated from the college during the last seventy-six years, and of these about 1,000 are still living.

Society News.—Drs. James H. Baldwin and W. R. Gilmour addressed the Philadelphia Academy of Surgery, November 1, on "Study of Gas Gangrene with Report of Cases."—— Dr. Lewis C. Scheffey addressed the Obstetrical Society of Philadelphia, November 4, on "Value of the Sugar Test in the Diagnosis of Pregnancy."——Dr. Aldred S. Warthin, Ann Arbor, Mich., addressed the College of Physicians, Philadelphia, November 3, on "Nature of the Family Susceptibility to Cancer."——The Pathological Society of Philadelphia held a symposium on "Relation of Roentgen-Ray Diagnosis to Pathologic Anatomy," November 11; the speakers were Drs. Ralph S. Bromer, Henry K. Pancoast and Frederick McPhedran.

The Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, amounting to about $300, will be made July 14, 1927, provided an essay deemed worthy shall have been offered. The essays may be on any medical subject, but can not have been published; they should represent new knowledge based on original or literary research, should be typewritten in English, and should be received by the secretary, John H. Girvin, 19 South Twenty-Second Street before May 1, without signature, plainly marked with a motto and accompanied by a sealed envelope having on the outside the motto and within the name and address of the author. The prize for 1926 was awarded to Dr. Percy S. Pelouze and Dr. Frederick S. Schofield, Philadelphia, for an essay entitled "The Gamophage."

RHODE ISLAND

Personal.—Dr. Harmon P. B. Jordan, for fourteen years connected with the Providence City Hospital, assumed the duties of superintendent of the Lying-In Hospital, October 1. Dr. Jordan's successor, as assistant superintendent at the Providence City Hospital, is Dr. Roy W. Benton who was promoted from second assistant, and Dr. Benton will be succeeded in that position by Dr. Panagis S. Dukakis.——At the quarterly meeting of the Rhode Island Medical Society, September 2, resolutions were passed recording appreciation of the nineteen years' service of Dr. Arthur H. Harrington as superintendent of the state hospital for mental diseases.

SOUTH CAROLINA

Society News.—Dr. Joseph A. Stucky, Lexington, Ky., addressed the Columbia Medical Society, November 13, on "Diet as a Factor in Diseases of the Ear, Nose and Throat." ——Dr. Edgar A. Hines reported a case of "Acquired Syphilis in a Male Child Two and One-Half Years Old with a Definite Chancre on the Genitals Followed by the Classic Eruption" before the Oconee County Medical Society, September 23; Dr. Larkin H. Jennings, Bishopville, was recently elected president of the Seventh District Medical Society. Dr. Hines also addressed the Pickens County Medical Society, October 6, at Central, on "How to Avoid the Fixation Period in the Doctor's Professional Career."——Dr. James N. Nesbitt, Gaffney, was recently elected president of the Fourth District County Medical Society at the twentieth annual meeting; Dr. Frank H. Richardson, New York, addressed this meeting on "The Psychology of the Child."

Sims Memorial Day.—The Woman's Auxiliary of the South Carolina Medical Association set apart November 13 for special exercises looking toward a proper memorial to

Dr. J. Marion Sims. Attention was drawn to this pioneer gynecologist through the press, and by leading educators, state officials and others. Dr. Sims was born in Lancaster; he graduated from the University of South Carolina, and completed his medical education at Jefferson Medical College, Philadelphia, graduating in 1835. He then practised in Lancaster, Mount Meigs, and Montgomery, Ala., later moving to New York where he was instrumental in founding the Woman's Hospital, the first of its kind. The operation for vesicovaginal fistula, which made him famous, was first performed while practicing in the South. Dr. Sims died Nov. 13, 1883. One of a series of meetings to be held throughout the state in behalf of the memorial was a meeting at Columbia, November 14, presided over by Dr. George H. Bunch, president of the state medical association, and addressed by Dr. Sophia B. Brunson, Sumter, J. Caldwell Guilds, president of Columbia College, Columbia, S. C., and others.

TEXAS

Personal.—Dr. Jesse A. Flautt, Galveston, has been elected by the county commissioners as new "county health physician" to succeed the late Dr. Joseph S. Jones; Dr. Flautt has practiced medicine in Galveston for about fifteen years.

Health Officers' Meeting.—The annual meeting of the county and city health officers of Texas will be at Austin, November 23-25. There will be demonstrations of the work of the laboratory under the direction of Dr. Livingston Anderson, assistant state health officer. Dr. H. Muench, director, bureau of health officers, will speak on cooperative work of county and city health officers. The state sanitary engineer will discuss sewage disposal plants. The work of each department of the Texas State Board of Health will be demonstrated.

VERMONT

State Medical Election.—At the recent meeting of the Vermont State Medical Society, Burlington, Dr. T. S. Brown, Burlington, was elected president; Dr. Stanton S. Eddy, Middlebury, vice president; Dr. William G. Ricker, St. Johnsbury, secretary, and Dr. David Marvin, Essex Junction, treasurer. Dr. Ricker was elected delegate to the American Medical Association, and the nominees for the board of registration were Drs. Schuyler W. Hammond, Rutland and Michael F. McGuire, Montpelier. The next annual meeting will be at Middlebury, Oct. 13-14, 1927.

WISCONSIN

Hospital News.—Dr. Louis E. Jones has established a twenty bed general hospital at Prescott.——A new $500,000 Methodist Hospital is being constructed at Madison.

Liquor License Revoked.—The district prohibition administrator, with headquarters at Chicago, recently issued orders revoking the liquor license of the following for the reasons indicated:

Dr. Luisa Kerschbaumer, Milwaukee, illegally issued prescriptions. Did not keep proper records.

Second Annual Clinic.—In THE JOURNAL, last week, the item concerning the annual clinic at the homecoming of Marquette University School of Medicine alumni should have included the name of Dr. Gustav Kolischer, Chicago. Dr. Kolischer's address was on "Surgical Diathermy of Malignant Tumors in Accessible Cavities of the Body," and was illustrated by motion pictures.

Increase in Death Rate.—The department of commerce announces that the death rate for Wisconsin for 1925 was 10.32 per thousand of population, as compared with 10.20 in 1924. The increase is more than accounted for by increases in death rates from influenza, smallpox and diarrhea and enteritis. There were decreases in 1925 in the death rates from scarlet fever, diphtheria and tuberculosis.

GENERAL

Personal.—The Hon. Charles Evans Hughes, formerly secretary of state and chief justice of the U. S. Supreme Court, has accepted the appointment of Honorary President of the American Association for Medical Progress, succeeding the late Dr. Charles W. Eliot.

International Antirabies Conference.—The health organization of the League of Nations, Geneva, Switzerland, is planning to convene an international antirabies conference at the Pasteur Institute, Paris, April, 1927. The principal antirabies institutions have been consulted with regard to the program and invited to send representatives.

Bulletin of Association of American Medical Colleges.—At the annual meeting of this association, October 25-27, it was decided to discontinue publication of the proceedings in an annual volume, and to enlarge the size of the bulletin sufficiently to contain all of this material in the four issues which constitute a volume. A subscription price of $2.00 a volume has been set, but each member college is entitled to twenty-five copies of each issue of the bulletin, as $5.00 of the annual fee for dues is set aside as the subscription fee. The bulletin will carry advertisements hereafter. The editor is Dr. Fred C. Zapffe, 25 East Washington Street, Chicago.

Fellows of National Research Council.—The National Research Council reports recent changes among its fellows as follows: Dr. Charles Weiss resigned his fellowship, September 30, to become director of laboratories, Presbyterian Hospital, San Juan, P. R.; Maurice B. Visscher, Ph.D., will resign, December 31, to accept a position in the department of physiology, University of Tennessee. The following physicians have been appointed fellows of the National Research Council:

Samuel W. Becker, M.D., dermatology and syphilology, Zurich.
Oran I. Cutler, M.D., pathology, Stanford.
Claus W. Jungeblut, M.D., bacteriology and immunology, Columbia.
David Perla, M.D., pathology and experimental medicine, not yet determined.

Decline in Animal Tuberculosis.—Although the amount of tuberculosis in cattle and swine received at federally inspected packing establishments is still extensive, the U. S. Department of Agriculture shows that there has been a general decline in bovine tuberculosis since 1916, and in tuberculosis of swine since 1924. Records for the fiscal year, 1926, show that nearly 14 per cent of swine show tuberculosis to some degree, though in a large part, the lesions were all of a minor nature. The corresponding figure for cattle for the same period was 1.3 per cent. In 1916, about 2.3 per cent of cattle, and in 1924, about 15.2 per cent of the swine inspected showed tuberculous infection. Field workers of the department reported that the large extent of infection among swine is caused partly by tuberculous poultry, and that subject is receiving special study. Since 1917, when the department of agriculture undertook the present tuberculosis campaign, more than a million cattle "reactors" have been removed from the herds of the United States.

Society News.—Dr. Walter D. Shelden, Rochester, Minn., was elected president of the Central Neuropsychiatric Association at the fifth annual meeting, Cincinnati, October 29-30; Dr. Alvin T. Mathers, Winnipeg, Manit., Canada, vice president, and Dr. Karl A. Menninger, Topeka, Kan., secretary-treasurer. The guest of honor at this meeting was Dr. August Wimmer, professor of psychiatry and neurology, University of Copenhagen, who spoke on "Epilepsy in Chronic Encephalitis" and "Clinical Aspects of Kleptomania."——At the annual meeting of the National Tuberculosis Association, October 5, Dr. Henry Sewall, Denver, was elected president; Hon. Calvin Coolidge, Dr. William H. Welch, Baltimore, and Dr. Theobald Smith, Princeton, N. J., honorary vice presidents; Drs. David A. Stewart, Ninette, Manitoba, and Eugene L. Opie, Philadelphia, vice presidents, and Dr. George M. Kober, Washington, D. C., secretary. The next annual meeting will be at Indianapolis, in May, 1927.——The International Union Against Tuberculosis will hold its sixth conference in Rome in 1928.

Realinement of Prohibition Districts.—Lincoln C. Andrews, assistant secretary of the treasury, announces a realinement of prohibition enforcement districts in the interest of efficiency, effective, December 1. It has been found necessary to set New Jersey apart as a district in itself because of the many sources of supply and the intricate enforcement problems; Ira L. Reeves has been appointed administrator with headquarters at Newark. The Philadelphia district will comprise the two eastern judicial districts of Pennsylvania and the state of Delaware. The Pittsburgh district, under J. D. Pennington as administrator, will comprise the western judicial district of Pennsylvania and the state of West Virginia. A new district is set up with headquarters at Norfolk, comprising the states of Virginia and North Carolina. A new district with headquarters at Savannah, Ga., will comprise South Carolina, Georgia and Florida. A district is set up with headquarters at Washington, D. C., consisting of Maryland and the District of Columbia. The southern counties of Illinois are transferred from the St. Louis district to the Chicago district. Major H. H. White will have charge of the headquarters at Washington; Mr. R. Q. Merrick will take charge at Norfolk, and Mr. Robert E. Tuttle at Savannah.

Government Services

Navy Personals

Lieuts. Edgar F. McCall, Arthur Judy, Roger A. Nolan and William D. Small have been found qualified for promotion to the rank of lieutenant commander.——Capt. David C. Cather, of the bureau of medicine and surgery, has been ordered to duty for a course of instruction in the Army War College. ——The Surgeon General has recommended the transfer of Dr. George C. Thomas from duty with the marines at Haiti to the receiving barracks, Hampton Roads, Va.——Comdr. George C. Thomas has been transferred for duty from Haiti to the receiving barracks, Hampton Roads, Va.; Lieut. Comdr. Edgar F. McCall, San Diego, to the U. S. S. *Kanawha.*

The Army's Mounted Medical Unit

The War Department announces that the "medical squadron, cavalry division," will be organized at Fort Bliss, Texas, as a part of the first cavalry division and it will be the first mounted medical unit in the U. S. Army. Medical personnel formerly accompanied the cavalry in wheel transportation and was, therefore, unable to maintain the same rate of march or to traverse rough terrain. The new mounted unit comprises, according to the announcement, a headquarters of two officers and seven enlisted men, all mounted; a collecting troop of two officers and fifty enlisted men, forty-three of whom are mounted; an ambulance troop of two officers and fifty enlisted men, seven of whom are mounted, the remainder being chauffeurs, motorcyclists and wagoners. There is also a hospital troop with five officers and fifty enlisted men, of whom twenty-eight are mounted, the others being chauffeurs, wagoners and hospital personnel. There is a veterinary troop of two officers and fifty enlisted men, forty-two of whom are mounted. The medical squadron has a total of thirteen officers and 207 enlisted men, of whom ten officers and 100 enlisted men will be mounted and able, therefore, to accompany the cavalry under circumstances which necessitate leaving the wheel transportation behind.

Colonel Keefer Appointed Assistant Surgeon General

The War Department announces the appointment of Col. Frank R. Keefer, medical corps, as assistant surgeon general with the rank of brigadier general, effective Feb. 10, 1927, on the retirement of Brig. Gen. Walter D. McCaw. Colonel Keefer was born in Pennsylvania, 1865; he graduated from the University of Pennsylvania Medical School in 1889 and was appointed assistant surgeon in the regular army in 1890. During the World War, he was chief, medical division, Provost Marshal General's Office, commanding officer, hospital no. 31, Carlisle, Pa., and from 1920 to 1922 was chief surgeon of the American Forces in Germany. He has had foreign service, in Alaska, Hawaii and the Philippines, has been a corps area surgeon and a professor of military hygiene at the Military Academy, West Point.

Veterans' Bureau—Life Work for Physicians

At the recent meeting of the medical council of the U. S. Veterans' Bureau, Washington, D. C., Frank T. Hines, director of the bureau, stated that the enormous amount of work in connection with veterans makes it imperative that the service be on a basis that will insure the development of permanent staffs at the hospitals. He urged that the medical officers regard their work in the bureau as their life work, saying that the bureau would be in the hospital business for the next fifty years, regardless of whether there was another war in the meantime. Records are said to show that since 1919 more than 500,000 World War veterans have been admitted to Veterans' Bureau hospitals; during the last year, 71,000 have been discharged and of these 55 per cent were recorded as improved. The number of ex-service men becoming temporarily broken down mentally continues to increase, while other classes of patients in bureau hospitals have begun to decrease. General Hines stated that additional facilities will be needed to care for the neuropsychiatric patients and that the question is whether Congress should be asked for funds to construct new hospitals or whether the bureau should attempt to convert existing hospitals for the care of this class of patients.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 30, 1926.

Fellowship for Tropical Medicine Research

The trustees of the Beit memorial fellowships for medical research are considering the appointment of a fellow who shall devote his whole time to research in tropical medicine. The salary will be $5,000 a year, and the appointment will be for five years. If the research is conducted in the tropics, the passage money out and home will be paid, and a grant may be made for necessary laboratory expenses. Every fellow must be a person, man or woman, of European descent by both parents, but otherwise of any nationality whatever, who at the date of election shall have taken a degree in any faculty, in any university in the British Empire approved by the trustees, or, if a woman, have passed the examination that would have entitled her if a man to take any such degree. In exceptional cases the possession of a medical diploma registrable in the United Kingdom may be accepted in lieu of a degree. Applications must be received on or before Feb. 1, 1927. Forms of application may be obtained by letter only addressed to Sir K. Fowler, Hon. Secretary, Beit Memorial Fellowships for Medical Research, 35 Clarges Street, W. 1. Candidates resident elsewhere abroad should send written applications giving full particulars of their previous career, with references to any published scientific papers or other evidence of capacity for research, and state the nature of the research they desire to undertake and how it is proposed to attack the problems that it presents. Referees will not be required for this appointment. No testimonials will be received. Canvassing of the trustees or the advisory board is not permitted. The candidate appointed to the fellowship will commence work at as early a date as possible.

The Mortality in India from Wild Animals

That the toll of human life that wild animals and venomous snakes take in India every year is decreasing is shown by the annual returns for 1925, which have now been received from local governments and administrations. Tigers are again responsible for the largest number of deaths. The total number of persons returned as killed by wild animals in British India during the year is 1,974, as against 2,587 in the previous year and 3,605 in 1923. Tigers were responsible for 974 of these deaths, leopards for 191, wolves for 265, bears for 82, elephants for 78 and hyenas for 6. Madras returned the highest number of deaths caused by tigers, the Central Provinces and Berar the highest number caused by leopards, the United Provinces by wolves, Bihar and Orissa by bears, and Assam by elephants. Of 388 deaths caused by other animals, 73 are assigned to wild pigs and 98 to crocodiles and alligators. The highest number of deaths caused by all wild animals occurred in Madras (464), Bihar and Orissa, the United Provinces and the Central Provinces and Berar coming next in order. The mortality attributable to elephants showed a marked increase in the provinces where the animals are mostly found. There has been a noticeable decrease in deaths caused by all other animals, except bears, in almost all the provinces. Deaths from snake bite fell from 19,857 to 19,308. Decreases occurred in Madras, the United Provinces, the Punjab, Burma, Bihar and Orissa, the Central Provinces and Berar and Assam, but Bombay and Bengal have reported slight increases during the year under review. Wild animals numbering 21,605 were reported to have been destroyed, of which 1,609 were tigers, 4,660 leopards,

2,485 bears and 2,361 wolves. A sum of 155,667 rupees was paid in rewards, against 169,765 rupees in the previous year. The number of snakes destroyed in India proper decreased from 47,106 to 41,004, and rewards paid for their destruction were 1,579 rupees, as against 1,403 rupees in the previous year.

The Smallpox Menace

In a letter to the press, Sir Leonard Rogers, an authority on tropical medicine, comments on the increase of smallpox in the North of England and the recent cases in London, which should awake the country to the fool's paradise in which we are living in consequence of neglect of vaccination. The following official figures show the rapid increase of the disease: 1921, 315 cases; 1922, 973; 1923, 2,485; 1924, 3,765; 1925, 5,354. The very low mortality from the disease recently in this and other countries has lulled the public into a false sense of security. The influence of such a dry season as the present in favoring smallpox epidemics was pointed out by Mr. Baldwin Latham in 1890 and has recently been confirmed in India, so everything seems ripe for the nemesis of neglected vaccination, ever since in 1907 parliament relaxed the powers of compulsory vaccination, and since then so further weakened them by administrative action as to make it more troublesome to submit infants to vaccination than to avoid it. Smallpox in a poorly vaccinated community, such as that of Great Britain today, is mainly a disease of childhood.

OUTBREAK OF SMALLPOX

A grave outbreak of smallpox is reported from Waterhouses, a colliery village near Durham. More than forty cases have been notified among schoolchildren. The health officer for the district stated that the extent of the outbreak was due to contact, and he complained of the indifference of many of the parents in not adopting vaccination as a preventive measure. All the patients have been removed to the isolation hospital.

Arsenic in Marine Crustaceans and Shell-Fish

At a meeting of the Society of Public Analysts, Mr. A. Chaston Chapman, F.R.S., produced evidence of the presence of compounds of arsenic in marine crustaceans and shell-fish. The amounts ranged from 10 to 174 parts of arsenic (as arsenous oxide) per million of the wet edible portions. Native oysters contained from 5 to 10 parts, and Portuguese oysters from 33 to 70 parts per million. In fresh-water fish, shell-fish and crustaceans the amounts of arsenic ranged from only about 0.4 to 1.5 parts per million. Mr. Chapman concluded that the arsenic in the marine animals was derived from the sea water, and ascertained the amounts of arsenic in sea water from various localities. Potted and canned crustacea and shell-fish contained from 0.5 to 85 parts of arsenic per million. The arsenic in the urine of two experimental subjects was raised, after a meal of lobster, from the normal figure of about 1/200 grain per gallon to 1/2 grain in one case and 1/3 grain in the other. Mr. Chapman, with the help of Mr. H. Linden, extended his researches to copper and lead. It was found that with regard to copper the dried edible portion of lobster contained 167 parts per million, of crab 130, and of whelks 115. The amounts of lead ranged from 5 (whelk) to 25.3 (lobster). Native oysters contained from 12 to 400 parts, and Portuguese osysters from 10 to 307 parts of lead per million. As in the case of arsenic, these metallic ingredients are probably derived from the sea water.

Outbreaks of Poliomyelitis

An outbreak of poliomyelitis has occurred in Broadstairs, a seaside resort on the east coast of England, where there are many schools. Fifty-three cases have been notified, and there have been two deaths. The outbreak has been mainly restricted to private boarding schools and day schools; three cases have occurred in convalescent homes. A medical officer of the ministry visited Broadstairs immediately and has conferred with the health officer and the local physicians as to the administrative arrangements for dealing with the outbreak. He has also been available for consultation in regard to individual cases. All necessary precautions have been taken to control the epidemic, leaflets of advice have been issued, and facilities for hospital isolation and disinfection provided. The schools have been converted into self-contained communities for work and play, cut off from all outside human contact. Another outbreak began in Leicester at the end of July and reached its maximum in the week ending September 18. The last case was notified, October 14. There were in all seventy-three cases, six of which were fatal. They occurred sporadically, all over the town. In no instance did more than one case occur in a household, and no one school was especially affected.

Plans to Prevent Road Accidents

A public safety congress, the first of its kind in this country, was held by the National "Safety First" Association. The minister of transport presided at the opening session, which was attended by more than 200 delegates from all parts of the country. A message was read from the National Safety Council of America, now holding its fifteenth annual safety congress, and the home secretary, as president of the association, had sent a corresponding message of good will to the American council. A joint paper on traffic accident prevention in relation to legislative and administrative action and road construction was presented by Mr. J. S. Pool Godsell and Mr. H. E. Aldington of the ministry of transport. Mr. Godsell stated that the number of driving licenses issued annually had risen in four years from 1,100,000 to approximately 2,000,000, and that the number of accidents involving personal injuries arising from the inexperience of a driver to handle his machine was so small as to be almost negligible. The progress made in the last few years by inventors and designers of antidazzle lamps and devices was by no means unsatisfactory, and, though none of them entirely eliminated dazzle, the dazzle danger would be considerably reduced if motorists would make more use of them. In all cases lamps should be properly focused and so adjusted that the main beam pointed slightly downward. The practice of pillion riding was extraordinarily prevalent, and doubtless if it were prohibited there would be a great outcry, as it would be contended that it was a species of class legislation, because pillion-riding was perhaps the only method whereby large numbers of people could get out into the country at week ends. Unfortunately, from a safety point of view, the majority of motor cyclists with pillion riders were comparatively very young, with powerful machines capable of very high speeds, who were taking out as a pillion rider their best girl, and had a not unnatural tendency to show off what they could do. While it must be admitted that there was some danger in pillion riding, the view might be held that its prohibition would deprive a large number of people of much pleasure and fresh air, and that the number of accidents was not sufficient to outweigh the other considerations. At the same time, the conveyance of more than one person pillion riding might be made illegal. Further, if pillion riding was to be allowed it might be permitted only with motor cycles of beyond a certain weight fitted with a "special pillion seat," and the passenger sitting astride. An analysis of accident reports showed that from year to year the percentage of accidents falling under each of the main headings remained remarkably steady, error of negligence on the part of drivers accounting for more than 50 per cent of the total and about

30 per cent being due to negligence by persons other than the drivers. These figures showed the need for their association, because any substantial reduction in the number of preventible accidents could be better achieved by the education of the public as a whole than by the making of regulations and the creation of new offenses.

CROSSINGS FOR PEDESTRIANS

Mr. Aldington, dealing with highways from the safety point of view, referred to the roundabout system of traffic working in London and said that the experience so far gained appeared to indicate that the risk of accidents had been reduced. Careful consideration was being given to the question of the safety of pedestrians generally, and suggestions were being considered for the erection of special traffic notices for the benefit of pedestrians, particularly where a round about system of traffic working was in operation, and also at other points where vehicular traffic was heavy. The possibility of providing recognized crossings for pedestrians defined by parallel white lines across the road at a point where there was a refuge in the center of the road was also being investigated with the erection of notices at these crossings urging pedestrians to use only recognized crossing places. The only sound method of providing for the safety of pedestrians at heavy traffic centers was to ascertain the main flow of pedestrian traffic and to provide subways. But pedestrians did not generally use subways; they preferred to take the direct line. Subways to be of benefit should be built on the direct line; there should be no turns, no corners and no steps; they should be approached down an incline on a gradient of about 1 in 10 to 1 in 12.

PARIS

(From Our Regular Correspondent)

Oct. 21, 1926.

Use of Hydrocyanic Acid for the Extermination of Rats

The council of the public health service of France has authorized the use of hydrocyanic acid for the extermination of rats in the holds of vessels. M. Violle, professor of hygiene at the University of Marseilles, describes the method employed. The procedure requires about three hours for a hold with a capacity of 1,000 cubic meters; namely, from ten to fifteen minutes for the discharge of the gas; one hour of contact, and two hours for the evacuation of the gas (or only one hour if suction pumps are used). The apparatus employed does not allow any gas to escape and emits no odor. Two grams of hydrocyanic acid is required for each cubic meter of space. No only the rats but also all vermin are exterminated. This method is now applied to the vessels arriving at Marseilles, in preference to the asphyxiating gases in use during the war, which were given a trial here at the suggestion of M. Gabriel Bertrand; more particularly, chloropicrin, which proved effective but was found to change the colors of certain delicate fabrics. Chloropicrin is, however, employed today to kill silkworms in the cocoon. This is more economical than the old method, which consisted in immersing the cocoons in boiling water, whereby many of the cocoons were more or less injured.

A Moslem Hospital in Paris

A committee has been appointed which plans, with the aid of the municipal council, to erect a Moslem hospital in Paris. Such an institution will make it possible to provide under one roof for the large number of Mohammedan workmen from Algeria, Tunis and Morocco who are at present scattered among the various hospitals of Paris. In a Moslem hospital they would receive treatment according to methods that are compatible with their religious customs, to which they attach the utmost importance. The hospital will be a private undertaking and will be supported by funds furnished by the various French colonies of Mussulmans and by foreign Islamic nations. This will be the first step in the solution of the problem of the hospitalization of foreigners at the expense of their nationals, such hospitalization constituting a heavy expense for the administrations of Paris and Marseilles.

Business Agents Refused Admission to the Hospitals of Paris

M. Adrien Oudin, member of the city council, has put through the council a resolution designed to stop the scandalous traffic that has been going on in Paris hospitals. When an accident occurred in the street, business agents followed the injured man to the hospital and obtained from him his signature authorizing them to bring suit for indemnities in his name before the courts, with the understanding that they were to receive 50 per cent of the amount secured. Printed contracts all prepared were presented to patients while their minds were still befuddled as a result of their injuries. The contracts were signed without their realizing the full import of them. Henceforth supervision will be exercised about the bed of the patients to prevent their being outwitted. In a previous letter, reference was made to a similar type of business agent who frequents the hospitals and endeavors to induce the relatives or friends of patients who have succumbed to operations to bring suit against the surgeon for damages.

Refusal of Special Priority Rights to Physicians' Automobiles

The municipal committee on traffic regulation has rejected the request of physicians that they be accorded special priority rights in the streets when responding to urgent calls from patients. The special exemption granted to the fire department to cross streets that are being temporarily blocked by the traffic police has been extended to ambulances transporting patients, but the committee on traffic regulations decided that, in view of the large number of physicians in Paris (5,000), the privilege if granted to physicians might be abused, being taken advantage of under circumstances that had no relation to their sanitary duties.

Epidemic Encephalitis Following Smallpox Vaccination

Dr. Comby has reported to the Société médicale des hôpitaux a third case observed by him in which epidemic (lethargic) encephalitis succeeded vaccination against smallpox. Twelve days after vaccination, the patient, a girl of 18 months in previously good health, presented a phlegmon at the site of one of the pustules. At the same time, there appeared internal strabismus, contracture of the upper limbs, somnolence and a high fever. Lumbar puncture revealed a clear spinal fluid containing albumin, glucose and a few lymphocytes. The fever subsided promptly and the phlegmon soon disappeared, but the contractures and strabismus persisted for some time. Somnolence gave way finally to excitement, accompanied by loss of memory for gestures that the child had previously understood and entered into. M. Netter, who is one of our foremost observers in the various aspects of epidemic encephalitis, persists in maintaining that this disease has no relation whatever to smallpox. He believes, however, that latent encephalitis may be evoked by a strong intercurrent infection. He thinks, too, that the smallpox vaccine used at present is much more potent than formerly. He recommends also that instead of three, or even six, inoculation punctures, as has been the routine of late years, only a single skin incision be made.

ITALY

(From Our Regular Correspondent)

Sept. 30, 1926.

Prizes for Researches on Cancer

At the Ospedale Maggiore in Turin, a center for the study, diagnosis and treatment of tumors, four prizes of 2,500 liras each have been established as rewards for cancer research. The competition is open only to physicians of Piedmont. The purpose of the prizes is to stimulate the publication of observations of physicians of the region roundabout on the topographic distribution of cases of malignant tumors, on increased incidence in certain districts and in certain apartments, and in relation, morever, to the climate and to the hygienic conditions of the surrounding region. Senator Pescarolo, professor of clinical medicine in the University of Turin, will be the chairman of the committee on award.

Government Cinchona Plantations in Java

The Italian government has begun in Java the cultivation of rubiaceous cinchona, which yields the bark from which quinine is extracted. The new Italian plantations cover an area of about 1,300 hectares. The bark obtained from the Italian plantations, instead of being processed in Java to remove the impurities, as has usually been done, will doubtless be sent directly to the government laboratory in Turin, where it will be put through the various stages in its elaboration.

Statistics of the New University of Milan

According to the annual recently published by the University of Milan, during the second year of its existence there were seventy-nine graduates, twenty of whom were from the medical department. Twenty-five passed successfully the state examination in medicine. There were thirty-one graduates from the school of obstetrics and 104 in various other specialties.

Malarial Treatment of General Paralysis

At a recent session of the Accademia medico-chirurgica in Naples, Dr. Annibale Puca communicated his results in the treatment of nineteen patients with general paralysis by inoculation with malarial blood. After the malarial treatment, he recommended the administration of heavy doses of neo-arsphenamine, to be followed by calomel. All of the nineteen patients were improved by this method of treatment.

Researches on Drinking Water

At the instance of the Unione statistica delle città italiane and of the Associazione dei comuni, Prof. Ugo Giusti and Dr. S. Veratti have made an investigation of the drinking water used in the various sections of the country. The information, which was obtained either at first hand or in response to lists of questions sent out, covers 8,392 communes, or 92 per cent of the total number in Italy, and embraces a population of 37,385,195, or 97.5 per cent of the entire population.

Of the communes subjected to the inquiry, 5,157 derive their water from springs and supply 22,000,000 inhabitants, while 2,103 communes, with approximately 10,000,000 inhabitants, derive their water from wells, and 514 communes, with 2,500,000 inhabitants, obtain their water supply from both springs and wells. It was found that 75 per cent of the communes, supplying about 80.5 per cent of the entire population, have good water; 20 per cent of the communes, supplying 15.5 per cent of the population of Italy, have mediocre water, and 5 per cent of the communes, supplying 4 per cent of the population, have a poor quality of drinking water.

From the point of view of quantity, 66 per cent of the communes, including 61.8 per cent of the population, have an adequate supply of drinking water, while 4,869 communes, comprising 21,000,000 population, have not such a supply of drinking water as the modern demands of public health impose.

The Italian-Spanish Agreement with Reference to Emigrants

The Italian and the Spanish governments have entered into an agreement with regard to the protection and medical care of emigrants on shipboard. The contracting governments have assumed the mutual obligation of providing that on the steamships of each nation the same protection and medical care shall be given emigrants and citizens seeking repatriation, belonging to the other nation, that is accorded to one's own nationals. With respect to medical care, it is further stipulated that Italian steampships which take on board in Spanish ports Spanish emigrants to a number not exceeding fifty are relieved of the obligation of having on board a Spanish physician and a Spanish personnel, provided there is on board an Italian personnel of the kind and number required by Spanish law, including an interpreter of the Spanish language. Spanish steamships are under similar obligations with respect to Italian emigrants who take passage thereon.

BELGIUM

(From Our Regular Correspondent)

Sept. 25, 1926.

The Projected Law Pertaining to Industrial Accidents, Occupational Diseases and Health Insurance

In England and France, the medical societies have considered various systems of industrial insurance that would give social protection without hardship to the medical profession. It seems, therefore, worth while to explain the outlines of the Belgian law as drafted and to call attention to certain modifications that possibly should and might be brought about if the physicians bring their united influence to bear.

1. Industrial Accidents: The projected law retains the provisions of previous legislation with respect to the furnishing of proof on the part of the injured employee, the requirements being based on the essential idea of contract relations. With regard to the medical care of the patient, the law establishes in principle the free choice of physician but with the restriction that the workman must forego such right in case the manager of the enterprise, or the insurer acting in his stead, has organized at his own expense a medical or pharmaceutic service. Certain modifications pertaining to the waiting time and to invalidity benefits have been incopbrated in the new law.

2. Occupational Diseases: These have not come within the scope of previous enactments, but, in the present draft, compensation for degenerative changes brought about by a workman's employment is based on the following provision: establishment of a special fund against the liabilities of occupational diseases, from which the payment of indemnities will be authorized following proper certification by medical experts, and possibly on the basis of an opinion rendered by a committee of the Service médical du travail. The fund will be maintained by (*a*) a government appropriation to cover the cost of establishing the service; (*b*) assessments levied on the managements of industrial enterprises, and (*c*) government subsidies in case a deficit arises. The occupational diseases the damaging effects of which may entitle a workman to compensation are given in a list which includes all kinds of industries and trades and which states just which diseases that are liable to be contracted in these

enterprises are recognized as occupational. The system resembles closely that which is in vogue in England.

3. Health and Invalidity Insurance: In the projected system, insurance against disease and invalidity would be compulsory in the sense that payments in favor of their employees would be an unequivocal obligation laid on the managements of industrial enterprises and all other employers of labor; also to the extent that workmen would be compelled to contribute a portion of their wages to the fund. Persons with annual incomes under 10,000 francs are subject to this provision of the drafted law. In case of sickness, the insurance guarantees: (*a*) medical care and free medicinals for all members of the family, as elsewhere defined, for a period of three years and six months; (*b*) a daily indemnity to be granted in case of the sickness of the insured, dating from the third day after the incapacity of the workman is established, the indemnity ceasing after the lapse of three years and six months, at which time it is replaced by a benefit granted on the basis of "premature invalidity," which benefit continues to be paid until the patient attains the age of 65, at which time the benefit takes the form of an old age pension.

With regard to the administration of the system, the bill provides for the creation of a superior council of public welfare institutions, to be composed of twenty-five members appointed by royal decree, including two physicians and two pharmacists proposed by lawfully recognized national federations of physicians and pharmacists; furthermore, a physician delegated by the Inspection médicale du travail. The council will appoint a "medicopharmaceutic committee" composed of seven members, including two physicians, one pharmacist, three representatives of the health insurance societies, and one government official, presumably an industrial physician.

Provision is made also for the following subcommittees: (*a*) a medicopharmaceutic subcommittee, to be composed of seven members—two physicians, a pharmacist, three representatives of the health insurance societies, a government official, and a chairman (presumably the industrial physician of the region), and (*b*) a technical subcommittee, to be composed of seven members, one a government official, who will serve as chairman. These two subcommittees taken together will constitute the Comité provincial des institutions de prévoyance.

There will be organized in each administrative district a regional bureau which will preserve a civil character, its purpose being to bring into early operation the provisions of the law pertaining to health insurance in the interest of the inhabitants of the region who are not insured in a recognized mutual benefit organization or health insurance society.

A national invalidity fund will be established. This fund will constitute the basis of insurance against invalidity, and, while it will be under the sponsorship of the state, it will retain a civil character. It will be administered by a council of six members, assisted by a director, all of whom will be government appointees.

The central medicopharmaceutic committee, appointed by the superior council of the *institutions de prévoyance*, will be charged with the organization of the medical and pharmaceutic service, will control its administration, and will settle, by means of conciliation or arbitration, the differences or controversies that may arise in connection with the service. It will have also general supervision over the provincial medicopharmaceutic subcommittees.

The provincial subcommittees will be organized in their respective regions on a similar basis to that of the central medicopharmaceutic committee. The medical and the pharmaceutic services will be organized on the basis of free choice among the accepted practitioners. As accepted physicians and pharmacists will be regarded all those who agree in writing to the tariff schedules and to the provisions to be promulgated by royal decree on recommendation of the superior council of the institutions de prévoyance.

In the event that the law as drafted is adopted, the medical profession will face the question of dealing with a clientele represented by from four to five million persons, for whom the superior council will have established definite fee schedules on the basis of the recommendations of the central medicopharmaceutic committee, acting in conjunction with the regional medicopharmaceutic subcommittees.

The physicians of Belgium are studying the situation with a view to demanding certain modifications in the wording of the bill as proposed.

PRAGUE

(From Our Regular Correspondent)

Nov. 1, 1926.

Ministry of Health

The independent existence of the Czechoslovak Ministry of Public Health and Physical Education is the center of discussion in the professional press. For some time, the administration of health matters has been entrusted to the minister of social welfare. It is apparently the intention of the government to do away sooner or later with an independent ministry of health. Originally the medical profession was against this measure but now some members see possible advantages in it. Principally two ministries come under consideration for possible amalgamation with the ministry of health: the ministry of social welfare and the ministry of interior, under the latter of which the administration of health matters developed historically. Furthermore, the ministry of interior possesses the police power which is often necessary for administering the rules and regulations pertaining to health. Police authority, however, could be delegated to the health officer for special cases even if he did not serve under the ministry of interior. Furthermore, the activities of the ministry of social welfare, which were of especial importance in the after-war period, are diminishing as conditions are returning to normal. It appears, therefore, that a ministry of public health and social welfare under one cabinet officer would be the best solution of the situation, and it is probable that in this common ministry health matters would come to predominate so much that from the point of view of public health there would be no difference from the present state of affairs.

Woman Faculty Member

While the study of medicine among women has become widespread in Czechoslovakia, women have not been admitted to any university degree other than the doctorate of medicine. An exception concerns Miss H. Langecker, who holds the doctorate of medicine and philosophy and who was recently given the right to lecture on experimental pharmacology at the German Medical Faculty of Prague. She is the first woman privatdozent in the history of the university.

Death of Jedlicka

Professor Rudolph Jedlicka of the Czech Medical Faculty in Prague died suddenly, October 27. Professor Jedlicka participated in several of the international surgical congresses held in the United States. He obtained his medical degree at the Czech Medical Faculty in Prague in 1896. In 1918 Jedlicka was given a surgical clinic of his own. Since 1923 he had supplemented his lectures on surgery with a special course on radiology and roentgenology. During the World War he served the whole time in the army, specializing in

orthopedic surgery. The institute for crippled children which bears his name is a model institution of its kind. He built up a modern radiologic institute in his clinic and founded the Czech Roentgenologic Society, of which he was the president. When radium was presented as a therapeutic agent, Jedlicka became interested in its application to surgery. A too frequent exposure to roentgen rays caused a dermatitis of his hands from which a cancer developed. His scientific publications are concerned chiefly with surgical diagnosis. He wrote a monograph on the surgery of the elbow, a book on the pathology and therapy of ulcer of the stomach, and a voluminous treatise on war surgery.

Scholarships Leading to Commissions in the Army Medical Corps

The army medical corps is at less than half strength because of insufficient pay. Therefore, the army has been obliged to employ civilian contract surgeons. According to a new scheme published by the ministry of national defense, scholarships will be given to certain applicants who have passed the first two years of medicine. The applicants must promise to fill the requirements for graduation not later than within the seventh year of their studies. Each scholarship amounts to 20,000 kronen, paid in two allotments. After the termination of their studies, applicants are obliged to serve a maximum of five years in the army, not counting the year of their compulsory military service.

Venereal Disease

In a recent article Dr. Charles Zrunek of the army medical corps discusses the effects of the new law on venereal diseases on the army incidence of these disease. The occurrence of veneral infections in the newly drafted men is a good index of the incidence of veneral diseases in the general population. According to Dr. Zrunek's figures the venereal rate per 10,000 of the newly drafted men was 83.1 in 1921. This rate decreased steadily, so that in 1925 it fell to 36.2. In 1924 the lowest figures were reached for all venereal diseases. If the incidence of venereal diseases in the newly drafted men is a good index of the incidence of venereal diseases in the population at large, a remarkable improvement in the situation is evident. How much of this drop is caused by the return to normal conditions and how much to the new law concerning venereal diseases remains to be proved. At any rate, abolition of the control of prostitution was not followed by increased incidence of venereal diseases, as was anticipated by the opponents of this measure. Venereal diseases are handled in the army as any other kind of infectious diseases for which isolation is enforced in the stage of contagiousness. Soldiers are examined twice a month for the incidence of venereal diseases. Another measure is investigation of the source of infection from which the venereal disease was acquired. Here cooperation with the civilian authorities is essential and made possible through the stipulation of the new law. In the course of two and one-half years during which this measure was practiced, 2,972 investigations were carried out (which is approximately one-half the number of the fresh infections). The source was actually discovered and abated by civilian authorities in 23.4 per cent of the cases. Chemical prophylaxis is enforced. Exposition of the dangers of venereal infections is an essential part of the educational program of the army. The soldier who contracts venereal disease is not punished even if he has not used prophylactic treatment. Great stress is laid on the proper treatment of infection. When a soldier who is infected with syphilis is discharged from active service before he is cured, he is required to report at a fixed date to a private physician, who has to notify the army surgeon to this effect.

BERLIN

(From Our Regular Correspondent)

Oct. 23, 1926.

Death of Prof. Otto Heubner

Prof. Otto Heubner died, October 17, in Dresden-Loschwitz, at the age of 83. He was a pupil of the internist Professor Wunderlich. At the age of 25, he became a privatdozent in internal medicine, at the University of Leipzig. In 1871 he published his observations as contributions to internal medicine, laying the chief emphasis on the manifestations of dysentery. In 1873, he was appointed professor extraordinarius. The following year, he published his monograph on syphilitic involvement of the cerebral arteries, on which he based the clinical, anatomic and pathologic aspects of endarteritis. About 1883, Heubner began to devote his chief energies to researches in pediatrics. In 1894, he responded to a call from the University of Berlin, where he became the successor of the pediatrician Henoch and the occupant of the chair of pediatrics. Here he developed great activity as an investigator, teacher and consultant. In 1903, he completed his textbook on pediatrics. On reaching the age of 70, he resigned his post, although still in vigorous health.

Plasmochin, the Malaria Remedy

On plasmochin, the new synthetic remedy in malaria, mentioned in a previous letter, three communications were presented at the Düsseldorf meeting of German scientists. Hörlein, pharmacologist, of Elberfeld, stated that the product stood in a certain genetic relation to quinine, but detailed chemical description was not given. It was tested in a new manner by Dr. Schulemann, the department director of the scientific laboratory of the dye works, with the aid of his co-workers Dr. Schönhöfer and Dr. Wingler. W. Roehl of Elberfeld performed the biologic experiments. The remedy was tested first in connection with malaria in birds. The substances to be examined were introduced into the stomachs of canary birds by means of esophageal sounds. Whereas the range of action (that is, the relation between the barely active and the barely tolerated solution) in quinine chloride is 1:4, the range of action in plasmochin was found to be 1:30. Also the active doses in the case of plasmochin chloride were much smaller. Only a tenth as much plasmochin as quinine required was needed to secure the same effect. The parasites are injured by the medicament itself and their development is checked, whereupon they succumb to the natural defense forces of the body. The mechanism is therefore very similar to that of Bayer 205 in trypanosomiasis. The clinical action of the remedy and the dosage were discussed by Professor Sioli, the psychiatrist, of Düsseldorf. He tested plasmochin in connection with malarial treatment of patients with general paralysis (inoculation malaria).

In testing to discover the amount that could be tolerated, doses up to 0.3 Gm. were given, which were well borne by some but which caused by-effects in others. As an active dose, he first experimented with 0.15 Gm. daily, but the action was so marked that the therapeutic dose could be further reduced. With 0.0125 Gm. of plasmochin daily, however, the action was found to be inadequate. It was finally decided that the administration of 0.02 Gm. three or four times a day is well tolerated and is sure to be effective. The by-effects that may occur if a heavier dose is given take the form of a peculiar cyanosis, which serves as a warning to avoid heavier doses. No deaths have occurred as yet among the patients with general paralysis to whom plasmochin was administered. The treatment of ordinary malarial infections with plasmochin was undertaken by Professor Mühlens of Hamburg. In the Hamburg institute of tropical medicine, treatment was given in 134 malaria cases, with exact daily blood control. The quantity administered ranged from 0.05 to 0.15 Gm. daily given

in several smaller doses. Aside from the small quantity required to secure the desired effect, another distinct advantage is the fact that the preparation is almost tasteless. The aforementioned daily doses were administered usually for a period of from five to seven successive days, until all the parasites had been eliminated, whereupon, as after-treatment, at intervals of from four to five days, they were given for three days in succession. The whole course of treatment (as in quinine treatment) was planned to cover from four to six weeks.

The case histories showed that the fever and the parasites disappeared within a few days after the beginning of treatment. There were, moreover, fewer recurrences of tertian and quartan fever after plasmochin treatment than after the customary quinine therapy. The number of parasitologic and clinical recurrences in the tropical type of malaria was greater when plasmochin alone was administered; the preparation destroyed, however, the persisting types of tropical malaria, the crescent-shaped sexual types. Heretofore, no medicament was known that would eliminate within a short time the sexual forms of parasites that were responsible for the transmission of tropical malaria by the anopheles mosquito. However, in recent cases of tropical malaria with numerous asexual parasites but no sexual forms, the prompt administration of plasmochin prevented in nearly every instance the formation of crescents. To prevent recurrences of tropical malaria also, a special preparation was made up consisting of plasmochin and a small quantity of quinine, to which the name "plasmochin compositum" was given. This combined preparation acted on tropical malaria in such a manner that all types of parasites disappeared from the blood almost simultaneously. For the purpose of control, since most of the patients in the Hamburg institute of tropical medicine had been previously treated with quinine, the remedy was tried in very recent and severe cases in regions in which malaria is endemic; namely, in Bulgaria, Jugoslavia, Greece, Spain and Italy. It has been employed in these countries in more than 250 cases. In tropical malaria, plasmochin compositum dispelled the parasites and the fever within a short time. No recurrences of tertian fever were observed within six weeks; a number of recurrences of tropical malaria were, however, noted. The treatment was applied also to children from 13 to 15 years old; and to infants, as well, to whom the remedy was given in an emulsion. No harm to blood corpuscles was observed in any case. Investigations as to the prophylactic action are in progress.

The Mortality from Transmissible Diseases in Prussia in 1924

In Prussia, exclusive of the Saar region, 107,925 persons died from transmissible diseases in 1924, or 28.6 per 10,000 of population, as compared with 140,404 persons in 1923, or 36.4 per 10,000 inhabitants. As in preceding years, tuberculosis claimed the largest number of victims (46,144 deaths, or 12.2 per 10,000 of population). Other transmissible diseases are arranged in a descending proportional order: pneumonia, 34,061 deaths (9.0 per 10,000); influenza, 9,832 deaths (2.6); pertussis, 3,790 deaths (1.0); infections of wounds other than erysipelas, 3,235 deaths (0.9); puerperal fever, 2,497 deaths (0.7); diphtheria and croup, 2,205 deaths (0.6); typhoid, 1,382 deaths (0.4); erysipelas, 963 deaths (0.3); measles and German measles, 784 deaths (0.2); scarlet fever, 542 deaths (0.1); transmissible animal diseases (rabies, anthrax, glanders, trichinosis), 21 deaths (0.01 per 10,000). From other transmissible diseases, there died 2,469 persons, or 0.7 per 10,000 of population. These were classified as follows: venereal diseases, 1,439; dysentery, 517; torticollis, 336; acute anterior poliomyelitis, 66; malaria, 45; chickenpox, 28; actinomycosis, 26; mumps, 8; smallpox, 2; typhus fever, 1, and leprosy, 1.

Marriages

ALFRED H. EHRENCLOU, Boston, to Miss Cora Hennen Morris of New York, October 26.

JOSEPH T. O'NEIL, Marseilles, Ill., to Miss Grace Drew of Toronto, Ont., Canada, August 9.

GILBERT H. GALFORD, Neenah, Wis., to Miss Nina Kramer of Aurora, Ill., September 27.

EUGENE L. BULSON, Fort Wayne, Ind., to Miss Phyllis Parker, Boston, recently.

JOY F. BUCKNER, Poneto, Ind., to Miss Winifred Morse of Indianapolis, August 7.

ZACHARIAH W. JACKSON to Miss Virginia Ewing, both of Atlanta, October 2.

Deaths

Robert Justice Wilson, New York; Bellevue Hospital Medical College, New York, 1890; assistant to the chair of genitourinary surgery at his alma mater, 1892-1893; formerly associate professor of bacteriology and hygiene, University and Bellevue Hospital Medical College; member of the Society of American Bacteriologists; past president of the American Hospital Association; assistant bacteriologist to the New York City Department of Health, 1896-1901, and New York Department of Health, 1902-1906; for many years director of the bureau of hospitals of the New York City Department of Health; aged 60; died, October 16, of progressive myelitis.

John Knox Gailey, Los Angeles; Medical Department of the University of the City of New York, 1877; formerly clinical professor of surgery, Detroit College of Medicine and Surgery, at one time on the staffs of the Harper and Children's Free hospitals and the Home of the Friendless, Detroit; aged 76; died, October 15, at the Pasadena (Calif.) Hospital, of cerebral hemorrhage.

Charles Edward Kimerline, New Washington, Ohio; Western Reserve University School of Medicine, Cleveland, 1896; member of the Ohio State Medical Association; past president of the Crawford County Medical Society; county coroner, 1916-1921; aged 55; died, October 14, at the Monnette Memorial Hospital, Bucyrus, following an operation for carcinoma of the intestine.

Arthur Malcolm Dodge, Hampton Falls, N. H.; Medical School of Harvard University, Boston, 1899; member of the Massachusetts Medical Society, and the Associated Anesthetists of the United States and Canada; formerly on the staff of St. Elizabeth's Hospital, Boston; served in the World War; aged 64; died suddenly, October 17, following a long illness.

William W. Fennell, Rock Hill, S. C.; Medical College of the State of South Carolina, Charleston, 1895; member of the South Carolina Medical Association; formerly member of the state board of medical examiners; founder of the Fennell Infirmary; president of the board of trustees at his alma mater; aged 58; died, October 11, following a long illness.

William Charles Laidlaw, Edmonton, Alta., Canada; University of Toronto Faculty of Medicine, 1895; associate professor of public health, University of Alberta Faculty of Medicine; deputy minister of health and chairman of the department of public health; aged 53; died, August 15, of myocarditis.

Otto Ferdinand Fischer ✠ Houston, Minn.; University of Minnesota Medical School, Minneapolis, 1897; secretary of the Houston Fillmore County Medical Society; chief physician, medical department, Quincy Mining Company; aged 54; died, October 11, of angina pectoris.

Phillip H. Artistide Pinard, Jefferson, S. D.; St. Louis College of Physicians and Surgeons, 1887; for several years county physician and county coroner; for more than fifteen years member of the school board; aged 76; died, September 27, of senility.

Amadeus Andrews Holtman, Omaha; Bennett Medical College, Chicago, 1907; member of the Nebraska State Medical Association; for many years on the staff of the Paxton Hospital; aged 56; died suddenly, October 10, of acute dilatation of the heart.

William C. Martin, Clay City, Ky.; Kentucky School of Medicine, Louisville, 1907; member of the Kentucky State Medical Association; past president of the Powell County Medical Society; aged 51; died, October 13, of cerebral hemorrhage.

Robert Henry Burton, Los Angeles; University of Illinois College of Medicine, Chicago, 1892; formerly associate professor of surgery and applied anatomy, College of Physicians and Surgeons; aged 65; died in October, of cerebral hemorrhage.

William Alan Williamson, Rockvale, Colo.; Trinity Medical College, Toronto, Ont., Canada, 1886; member of the Colorado State Medical Society; aged 63; died, September 26, at the Minnequa Hospital, Pueblo, of gastric ulcer.

Frank H. Erwin, Morrill, Kan.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1882; member of the Kansas Medical Society; aged 66; died, October 11, of heart disease.

Jacob Weichselbaum, Savannah, Ga.; Savannah Medical College, 1880; aged 78; formerly on the staff of St. Joseph's Hospital, where he died, October 5, of intestinal obstruction following an operation for hernia.

John Trower Wilkins, Jr., Bridgetown, Va.; Bellevue Hospital Medical College, 1873; aged 73; died, October 12, at the Sarah Leigh Hospital, Norfolk, of peritonitis following appendicitis.

William Wallace Bruce, Thomasville, Ga.; Medical Department of the University of the City of New York, 1879; aged 71; died, October 14, of carcinoma of the rectum.

Charles Adam Ulmer ✠ Bucyrus, Ohio; University of Michigan Medical School, Ann Arbor, 1902; formerly county coroner; aged 49; died, October 16, of brain tumor.

David Thomas Corde, Otisville, N. Y.; Bellevue Hospital Medical College, New York, 1890; aged 62; died, October 10, at Middletown, of chronic pulmonary tuberculosis.

Louis D. Lippitt, Providence, R. I.; Hahnemann Medical College and Hospital of Philadelphia, 1889; aged 59; died, September 21, of chronic valvular heart disease.

Abel Heald Martin, Walnut Grove, Calif.; Cooper Medical College, San Francisco, 1889; aged 63; died, June 20, at the Misericordia Hospital, Sacramento, of uremia.

Robert Harper, Detroit; Detroit College of Medicine and Surgery, 1897; for many years a medical missionary in India; aged 60; died, October 17, of heart disease.

Harold Augustus Caswell, New York; Tufts College Medical School, Boston, 1923; aged 30; died, August 28, at St. Francis Hospital, of pneumonia.

Alexander H. Culpepper, Homerville, Ga.; Atlanta Medical College, 1894; mayor of Homerville; aged 66; died, October 12, of heart disease.

Martin A. Colman, Mattawan, Mich.; Chicago Medical College, 1875; aged 72; died, October 13, at a hospital in Cassopolis, of nephritis.

William Elliott Campbell, Davenport, Iowa; Hering Medical College, Chicago, 1905; aged 70; died, October 17, of cerebral hemorrhage.

Almer A. Lyker, Gloversville, N. Y.; Albany Medical College, 1878; aged 73; died in September, of mitral stenosis and chronic myocarditis.

J. S. Durette, Horse Cave, Ky.; Meharry Medical College, Nashville, Tenn., 1897; aged 59; died, October 11, of organic heart disease.

Jonathan G. Rugg, Gowanda, N. Y.; Eclectic Medical Institute, Cincinnati, 1875; aged 88; died, October 2, of arteriosclerosis.

Harry G. Peck, Columbus, Wis.; Chicago Homeopathic Medical College, 1894; aged 65; died, September 12, of heart disease.

Robert F. McGinness, Brooklyn; Baltimore University School of Medicine, 1898; aged 54; died, October 23, of heart disease.

Gibson Browne, Keokuk, Iowa; Keokuk Medical College, 1893; aged 56; died, October 17, of a self-inflicted bullet wound.

Henry C. Blake, Lockbourne, Ohio; Columbus Medical College, 1876; aged 76; died, October 18, of pneumonia.

John Marion Chrzan, Chicago; Chicago Medical School, 1921; aged 44; died, September 29, of cervical adenitis.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

"PABST EXTRACT—THE 'BEST' TONIC" NOT ACCEPTABLE FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The report which appears below was submitted to the Pabst Corporation and in reply, the firm proposed a revision of the therapeutic recommendations appearing on the label. This revision, has not, in principle, removed the Council's objection to these recommendations, and therefore, the Council authorizes publication of its report.

W. A. PUCKNER, Secretary.

"Pabst Extract—The 'Best' Tonic," according to the Pabst corporation, Milwaukee, Wis., represents a "pure extraction of malt, properly flavored and combined with hops and is preserved by no other means than pasteurization." The preparation is stated to contain alcohol, by volume, 3.70 per cent; reducing sugars (determined as maltose), 9.08 per cent; dextrins, 11.55 per cent; protein, 1.398 per cent; mineral salts (mostly phosphates), 0.485 per cent; and phosphoric acid, 0.165 per cent. To prepare the product it is stated that malt is mashed, the watery extract boiled with hops and then concentrated to the desired strength, cooled and fermented with yeast until it contains approximately three per cent of alcohol. In reference to the amount of hops it is stated that 1.45 Gm. of hops are used for every 12 fluid ounces of "tonic."

The label of Pabst Extract—The "Best" Tonic carries the following claims:

"Not offered as a 'Cure-for-all remedy,' but we are satisfied that it will fully meet the demand of the medical profession and a general public, as the most efficacious remedial agent to — Build up the constitution — strengthen the nervous system — restore sound refreshing sleep — promote a good digestion — insure a healthy appetite — a godsend to nursing mothers. . . ."

In addition to these unwarranted claims, the label bears direction for the use of this preparation in "loss of appetite," "dyspepsia," "sleeplessness," "coughs and colds."

Pabst Extract—The "Best" Tonic is unacceptable for New and Nonofficial Remedies because (1) the name does not indicate the potent constituents—malt and hops—of the mixture; (2) the claim "The 'Best' Tonic" is not warranted; (3) the therapeutic claims are unwarranted; and (4) it is sold to the public with claims that tend to its indiscriminate and ill advised use.

HOYT'S PROTEIN CEREAL OMITTED FROM N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has authorized publication of the following report.

W. A. PUCKNER, Secretary.

Hoyt's Protein Cereal is a preparation of gluten in the form of flakes containing protein, 78 per cent; fat, 1 per cent, and starch, 4 per cent, which is manufactured by the Pure Gluten Food Co. (New and Nonofficial Remedies, 1926).

In September, 1925, a circular for Hoyt's Protein Cereal was received from the Pure Gluten Food Co. which contained statements to which the member of the Council who acts as referee for medicinal foods, took exception. The following was written to the manufacturer:

The referee writes that the following statement in the circular is essentially meaningless to him: "even higher in analysis than the various protein foods," etc. The claim in the circular that the product is a "newly discovered" food is absurd. The claim that this product is "the first of its kind from the vegetable kingdom" is equally misleading, and the suggestion that this may often be preferred to the proteins of the animal class, on account of its freedom from the toxins and objectionable extractives of the latter suggests that animal proteins are poisonous and should not be permitted. The claim that "physicians now have a corrective food at their command, quite different than any other" is also false.

The firm replied that the advertising to which objection was made had been discontinued. In June, 1926, a circular was received from the Pure Gluten Food Co. which contained the following statements in reference to Hoyt's Protein Cereal:

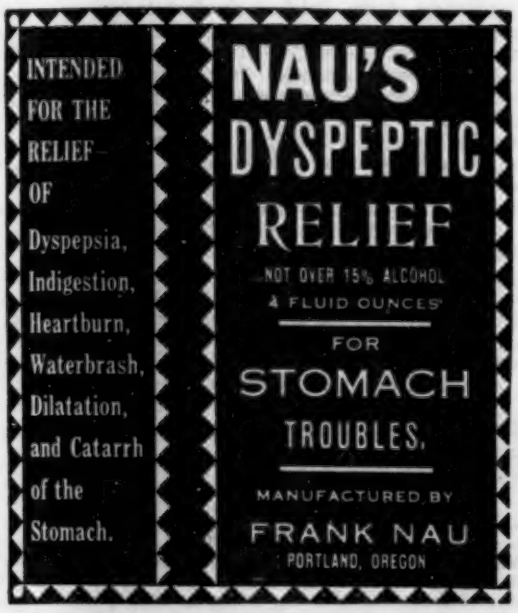
Approved by and advertised in the Journal of the American Medical Association. This is the only protein food that is not an animal product and shows a higher protein test. Besides, it does not contain the irritating extractives nor has the toxic tendencies of meats, eggs and milk-casein, which are the principal proteins from the animal kingdom. Hoyt's Protein is a safe and most effective food remedy for treating diabetes. For reducing fat, this food affords the best and the most natural way.

These misleading and unwarranted claims are essentially similar to those to which objection was made previously; therefore the Council rescinded its acceptance of Hoyt's Protein Cereal and directed its omission from New and Nonofficial Remedies.

MORE MISBRANDED NOSTRUMS

Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

Nau's Dyspepsia Remedy.—In October, 1925, Frank Nau, Portland, Oregon, shipped to San Francisco, California, a quantity of "Nau's Dyspepsia Remedy," which the government declared was misbranded. The article came in the form of a bottle of liquid and a box of tablets. Analysis by the Bureau of Chemistry showed that the tablets were composed essentially of bismuth subnitrate, cane sugar, and milk sugar,


INTENDED FOR THE RELIEF OF Dyspepsia, Indigestion, Heartburn, Waterbrash, Dilatation, and Catarrh of the Stomach.
NAU'S DYSPEPTIC RELIEF
NOT OVER 15% ALCOHOL & FLUID OUNCES
FOR STOMACH TROUBLES.
MANUFACTURED BY FRANK NAU PORTLAND, OREGON

flavored with ginger and peppermint oil. The liquid preparation was found on analysis to be composed essentially of extracts of plant drugs, including golden seal and licorice, glycerin, alcohol and water. The claims on the trade package recommended the preparation for dyspepsia, chronic stomach troubles, dilatation and ulceration of the stomach, and various other conditions. These claims were declared to be false and fraudulent, and, in February, 1926, no claimant having appeared, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed. —*(Notice of Judgment No. 14222; issued August, 1926. Chem. Suppl. 215.)*

Angelus Beef, Iron and Wine.—The Brunswig Drug Company of Los Angeles shipped in November, 1920, and February, 1922, a quantity of "Angelus Beef, Iron and Wine" that the federal officials declared was misbranded. In January, 1923, the United States attorney filed a libel, praying the seizure and comdemnation of the product. Analysis by the Bureau of Chemistry showed that "Angelus Beef, Iron and Wine" was composed of meat extract, iron salts, potassium bitartrate, sugar, alcohol and water. It was falsely and fraudulently claimed on the trade package to be a useful therapeutic agent in dyspepsia, nervous prostration, consumption, and all wasting diseases and forms of general debility. In May, 1925, no claimant having appeared, judgment of condemnation and forfeiture was entered, and the court ordered that the product be destroyed.—*(Notice of Judgment No. 14108; issued July, 1926. Chem. Suppl. 213.)*

Correspondence

DERMATITIS FROM ANTIFAT REMEDY

To the Editor:—I am reporting another proprietary, pleasantly flavored, fat reducing medicament as causing dermatitis. Like them all, it is guaranteed to contain no harmful ingredients. It is is but another argument against the permission to patent drugs without the investigation of a nonbiased group.

A solution made of a small portion of the substance, to which was added a few drops of 10 per cent sodium hydroxide, gave the typical color reaction of phenolpthalein. The patient is a young man who had five previous attacks of a similar eruption. The peculiarity of the eruption was its recurrence in the same sites as on each previous attack and its appearance in the form of an intense inflammatory reaction, with redness, swelling and bullae. The picture was that of erythema multiforme, with coin-sized areas of pigment on the site of each bleb. In each instance the reaction was limited to the neck, both front and back. "Slends" are prepared and marketed as a form of chewing gum. Some one had given my patient one of them as a piece of harmless gum.

SIGMUND S. GREENBAUM, M.D., Philadelphia.

"OPERATION FOR CORRECTION OF MILD CLAW-FOOT, THE RESULT OF INFANTILE PARALYSIS"

To the Editor:—Drs. Frank D. Dickson and Rex L. Diveley, who wrote on this subject (THE JOURNAL, October 16, p. 1275) seem to have devised a successful operation for this condition, and, being a clinician myself, I have only praise and admiration for anybody that perfects a cure for anything. My criticism of this article, therefore, is in the friendliest spirit and is made solely for the purpose of keeping physiology straight.

In the opening paragraph appears the following statement:

In all cases of claw-foot due to anterior poliomyelitis, there is weakness or paralysis of the flexor longus hallucis and the flexor longus digitorum, with overaction of the corresponding extensor tendons, resulting in prominence of the ball of the foot and the development of hammer toes.

This seems to imply a false conception of the causative factor in the production of claw-foot. The action of the long toe flexors is to flex the interphalangeal joints, while the long toe extensors extend the metacarpophalangeal joints. Both these groups are active in cases of claw-foot, while the intrinsic foot muscles which flex the metacarpophalangeal joints, extend the interphalangeal joints and raise the transverse arch of the foot are inactive. Claw-foot is essentially due to paralysis of the intrinsic muscles. Of course the long flexors may be weak, but they do not have to be weak. This is clearly shown by traumatic cases in which the posterior tibial nerve is cut below the level of supply to the long flexors. A fairly typical claw-foot results and in such cases there can be no question of weakness of the long flexors.

The success of the operation described by Drs. Dickson and Diveley seems to me to be largely due to the arthrodesis of the interphalangeal joint, which at once gives the long flexor

control over the metacarpopahlangeal joint, and so enables it to substitute for the lost intrinsic flexor of this joint. The transplantation of extensor proprius hallucis doubtless helps, because it gets it away from where it was, and also because it gives the tendon a hold on the head of the first metatarsal and so enables it to lift the fallen end of that bone. I doubt whether the reinforcing action on the flexor longus hallucis is of much importance, because, as is well known, transplantation of extensors into flexors, or vice versa, is attended by indifferent success in the foot.

HUGH A. THOMPSON, M.D., Raleigh, N. C.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COMPOSITION OF AND LEAD POISONING FROM SNUFF

To the Editor:—Several interesting cases of lead poisoning that have come under my observation have been proved to have as their source the lead found in snuff. I would appreciate your sending me any information extant on chemical analysis of various brands of snuff tobacco, and the possible ways that lead gets into the snuff. Search of the literature and chemical textbooks at my disposal gives me little information. If it is necessary to publish your answer, please omit my name.

J. U., M.D., New York.

ANSWER.—Hubert (Bull. 14, North Dakota Agric. Exp. Station **5,** October, 1919) has published an analysis of snuff and other tobaccos as follows:

Results of Analyses of Snuff and Other Tobaccos

Sold as	Brand	Per Cent of Moisture	Per Cent on Dry Weight: Ash	Nicotine	Total Nitrogen	Ammonia Nitrogen
Snuff	Railroad Mills, Irish	8.50	.....	0.59	....	....
	Diamond Maccoboy	34.20	.....	2.34	....	....
	Lorillard's Irish	6.30	.....	1.14	....	....
	Independent Polish	36.30	.....	1.78	....	....
	Kociuszko Tabaka	35.40	.....	1.75	....	....
	Russian and Polish	40.10	.....	2.09	....	....
	Offert, Polish	39.20	.....	2.22	....	....
	H. Groza's, Polish	33.50	.....	3.02	....	....
	Victor brand, Polish	36.90	.....	3.52	....	....
	Copenhagen (W. B. Co.'s)	54.40	36.64	3.27	3.31	0.70
Fine cut chewing	Right cut (W. B. Co.'s)	37.80	33.43	3.75	3.43	0.85
	W. B. cut (W. B. Co.'s)	40.40	28.93	3.59	3.73	0.63
	Sterling	15.20	14.00	1.30	2.92	0.10
	Rose leaf, Lorillard's	15.30	.....	1.40	....	....
	Peerless, Adam's	8.73	17.30	3.53	3.60	0.68
Cut plug	Sun cured, Bagley's	9.06	15.60	3.86	....	....
Twist	Granger's twist	8.30	12.60	3.25	4.26	0.49
Plug	Natural leaf, Drummond's	7.90	16.70	2.52	....	....
	Piper Heidsieck	16.00	17.90	2.45	....	....
	Boot Jack	16.50	19.30	3.29	3.25	0.44
	Sun-cured, Reynold's	19.56	14.37	3.41	2.46	0.32
Smoking	Prospero de Mobili Fermentato	18.70	.....	4.46	....	....
	Perique, Allen & Ginter's	23.98	29.11	5.29	4.17	1.04
Cigar	Prospero de Mobili	6.70	.....	5.71	....	....
	La Flor de Murias, Colorado	13.80	.....	1.06	....	....
	Orlando, Colorado	8.60	.....	2.10	....	....

As was pointed out by Ladd previously (Bull. 19, North Dakota Agric. Exp. Station **2,** September, 1913) the difference between snuff and tobacco is not great. Snuff is, of course, a very finely cut tobacco, and has generally been subjected to a fermentation process. About fifteen years ago, both Kebler (THE JOURNAL, May 29, 1909, p. 1774) and the Kansas State Board of Health reported finding morphine in "Tousley's Sneezeless Snuff."

A case of fatal lead poisoning by continued use of snuff tobacco has been reported by Stadler (*Cor.-Bl. f. Schweiz. Aerzte,* 1912, No. 5, in *Schweiz. med. Wchnschr.* **50**:202 [C. A. **6**:2139] 1912), who states that the snuff was wrapped in a metal foil which latter on analysis was found to contain 89 per cent lead. The snuff tobacco, when examined, was found to be moist, and contained from 1.75 to 1.9 per cent of lead as a contaminant. This was sufficient to cause fatal intoxication by habitual use of the snuff. Kohn (Die epidemic Angina Pectoris auf der "Embuschade," Eine Augebliche Tobakangina, *Deutsche med. Wchnschr.* **11**:447 [March 12] 1926) investigated the original reports on the epidemic of angina pectoris on the gunboat *Embuschade* in 1862 and concluded that the lead contaminant was the probable cause rather than the tobacco itself, as heretofore suspected.

It is quite probable that the lead to which our correspondent refers finds its genesis either from the container or from the foil which is used as a liner or wrapper.

PRESCRIBING ALCOHOLIC COMPOUNDS

To the Editor:—The druggists who fill my prescriptions tell me that they have been informed by the prohibition agent that prescriptions such as that submitted below must be written on official prescription blanks, form 1403, issued by the Bureau of Internal Revenue:

℞ Hydrargyri chloridi corrosivi ..... 3 grains
Resorcinolis ..... 1 drachm
Etheris ..... 3 drachms
Alcoholis ..... 1 ounce
Aquae rosae, q. s. ..... ad 6 ounces
M. Sig.

If this is true, it is a ridiculous imposition on the medical profession. What are the facts?

M.D., Missouri.

To the Editor:—I have obtained no license to prescribe liquor. May I write the following prescription without violating the law?

℞ Tincturae nucis vomicae ..... ½ fluid drachm
Spiritus frumenti, q. s. ..... ad 1 pint
M. Sig. One-half ounce three times a day, after meals.

M.D., New Jersey.

ANSWER.—Answers to the foregoing questions turn on the susceptibility of the finished product to use as a beverage. The first prescription calls for a mixture that cannot be used as a beverage; it may lawfully be written by any physician on any prescription blank. In the second prescription the whisky is not sufficiently medicated to prevent use as a beverage; it can be written only by a physician holding a permit under the National Prohibition Act, on an official blank, and then only subject to the restrictions of federal and state laws governing the prescribing of liquor.

Prescriptions for medicinal preparations *unfit for beverage use* need not be written on the official blank, even though whisky, rum, gin, brandy or wine is a part of the prescribed mixture. A pharmacist, however, may not lawfully fill such a prescription unless he is satisfied that the medication is sufficient to prevent the use of the mixture for beverage purposes. Such a prescription must show, too, the names of physician and patient, and their addresses, including the state and city, or other local designation, and the street and number, if any. The physician need not write such a prescription in duplicate, and it is not subject to any other provisions of the regulations.

BIOGRAPHY OF DR. MUDD

To the Editor:—Please supply me with or advise me where I can procure bibliographic data on the life of one Dr. Mud (ominous name), the Maryland physician who rendered emergency treatment to John Wilkes Booth early in the morning following his fatal shooting of President Abraham Lincoln, and who was afterward tried by military court and sentenced to life imprisonment as an accomplice to the murder of Lincoln, the sentence being meted out to him at Fort Jefferson, Dry Tortugas, until 1869, when he was paroled by President Johnson. An article relative to Fort Jefferson in a recent copy of the *Saturday Evening Post* touches on this incident, and I am interested to learn more of Dr. "Mud."

ROBERT W. ALLEN, M.D., Norman, N. D.

ANSWER.—The essential facts about Dr. Mudd, who set the leg of John Wilkes Booth, are given in "The Life of Abraham Lincoln," by William E. Barton, volume II, page 357. He was convicted as an accessory after the fact, sentenced, and was the first of the conspirators pardoned by Andrew Johnson. The attempt of the defense was to show that he had performed only his professional duty. The prosecution endeavored to show that in addition to this he assisted Booth to escape when he had reason to believe he was the murderer of the President, and that he had previously uttered such sentiments as to justify the belief that, without knowing of the actual plot, he had reason to believe that there was a plot and was in sympathy with it. A verbatim report of his trial appears in Ben Pitman's volume (1865) on the Assassination and Trial. There is also a "Life of Dr. Mudd" which can probably be secured from Cornwall, bookseller, 227 Pennsylvania Avenue N.W., Washington, D. C. It is not a high priced book, and is written from Dr. Mudd's standpoint, prejudiced,

of course. It is generally believed that he deserved more sympathy than any of the others tried, but that he was not guiltless.

BOOK BY JAMES EWELL

To the Editor:—I am in possession of a medical book, "The Medical Companion and Materia Medica," published in 1827, written by one James Ewell, M.D. It seems to have been intended as a comprehensive work on general medicine, apparently intended both for the profession and for the laity. Please advise me if it has any historical value. Is James Ewell's name known in medical history of the early part of the nineteenth century?

WILLIAM C. TATUM, M.D., Fort Worth, Texas.

ANSWER.—The fifth edition of this work was published in Philadelphia in 1819. Kelly and Burrage have a sketch of Thomas Ewell, who, they say, was a brother of Dr. James Ewell. No sketch of him is given. In the title page of the fifth edition of "The Medical Companion and Materia Medica" he is spoken of as physician in Washington, formerly of Savannah.

STERILIZING MILK VESSELS

To the Editor:—What are the advantages or disadvantages of chemical so-called bacteria killers as compared with steam in the work of sterilization of milk vessels?

P. D., Florida.

ANSWER.—The disinfecting agent of first choice for the treatment of milk utensils is heat, as it is simple of application and effective in destroying pathogenic bacteria, if used at a sufficient temperature and a sufficient length of time. Chemical disinfection in general is open to the criticism that agents may be used improperly or in insufficient amount to give real disinfection. It is admitted, however, that, when properly controlled, chemical disinfection can be made practical and efficient. Chlorine disinfectants are permitted by some health departments, and the dosage of "available" chlorine in the rinse water, as recommended for this purpose, is usually 35 parts per million. Frequently, a department of health that permits chlorine disinfection nevertheless gives preference to heat sterilization.

AUTOMOBILE ANTIFREEZE MIXTURES

To the Editor:—Will you please give me formula for an antifreeze solution for automobile radiators? Please omit name.

M.D., North Dakota.

ANSWER.—A discussion of various automobile antifreeze solutions, together with the proportion of ingredients for different temperatures, was discussed in THE JOURNAL, Dec. 26, 1925, pp. 2049 and 2050. Reprints of this article may be obtained from THE JOURNAL by sending a self-addressed stamped envelop.

RADIOACTIVE SUBSTANCES IN THE BLOOD

To the Editor:—I have read in two lay journals that radioactive substances injected are now used to determine accurately the velocity of the blood. Please give me any data, etc., you may have.

CHARLES R. DANCER, M.D., Fort Wayne, Ind.

ANSWER.—There have appeared in lay journals accounts of the use of radioactive substances to determine the velocity of the blood, but the description given was generally inadequate. It is hardly conceivable that enough radium could be placed in the blood stream so that its presence at a given point of the body could be determined by placing an electroscope at one point.

Minute quantities of radium can be detected analytically, the sample required for this purpose being in the order of a millionth of a microgram. It is likewise true that quantities of radium up to the order of a milligram may be injected in the form of a soluble solution, intravenously, without untoward effect. It might be possible that the injection of a fair quantity of radium at one spot in the body, accompanied by the periodic taking of samples of blood at some distant part of the body, with subsequent testing of the blood for radium content by the so-called emanation method, would throw some light on the speed with which the radium circulated from the point of injection to the point of taking of sample. The article to which attention was called, however, was to the effect that an electroscope placed near the body was used to detect the arrival of the radium. This would involve the detection of more penetrating rays—certainly hard beta and gamma rays—and would involve the presence at the point in question of quantities of radium in the order of micrograms, and this in turn would involve the injection of relatively enormous amounts of radium.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 11-14. Chairman, Dr. S. W. Welch, Montgomery.

ARIZONA: Phoenix, Jan. 4. Sec., Dr. W. O. Sweek, 404 Heard Bldg., Phoenix.

DELAWARE: Wilmington, Dec. 14-16. Pres., Dr. H. W. Briggs, Wilmington.

DISTRICT OF COLUMBIA: Jan. 11. Sec., Dr. Edgar P. Copeland, Suite 110, 1801 Eye St., N. W. Washington.

HAWAII: Honolulu, Jan. 10-13. Sec., Dr. A. L. Davis, 1254 Emma St., Honolulu.

INDIANA: Indianapolis, Jan. 11. Sec., Dr. William T. Gott, Crawfordsville.

KENTUCKY: Louisville, Dec. 7. Sec., Dr. A. T. McCormack, Louisville.

MARYLAND: Baltimore, Dec. 14-17. Sec., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore.

MINNESOTA: Minneapolis, Jan. 4-6. Sec., Dr. A. E. Comstock, 636 Lowry Bldg., St. Paul.

NORTH DAKOTA: Grand Forks, Jan. 4-7. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, Dec. 1-3. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.

OREGON: Portland, Jan. 4-6. Sec., Dr. M. K. Hall, 816 Pittock Block, Portland.

UTAH: Salt Lake City, Jan. 4-5. Director, Mr. J. T. Hammond, 412 State Capitol Bldg., Salt Lake City.

VIRGINIA: Richmond, Dec. 7-10. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke.

WEST VIRGINIA: Morgantown, Nov. 23. Commissioner, The Public Health Council, Dr. W. T. Henshaw, Charleston.

WISCONSIN: Madison, Jan. 11. Sec., Dr. Robert E. Flynn, 315 State Bank Bldg., La Crosse.

Alabama July Examination

Dr. Samuel W. Welch, chairman of the Alabama Board of Medical Examiners, reports the written examination held at Montgomery, July 13-15, 1926. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Nineteen candidates were examined, all of whom passed. Twenty-five candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Number Passed
Emory University School of Medicine		(1926)	5
Tulane University of Louisiana School of Medicine		(1926)	10
Harvard University		(1924)	1
Jefferson Medical College of Philadelphia		(1926)	1
University of Tennessee College of Medicine		(1926)	2

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Atlanta College of Physicians and Surgeons		(1906), (1912)	Georgia
Emory University School of Medicine		(1923)	Georgia
University of Georgia Medical Department		(1924)	Georgia
Rush Medical College		(1924)	Illinois
Tulane University of Louisiana School of Medicine	Louisiana, (1924) Mississippi, (1925) Louisiana, Mississippi, Tennessee	(1923, 2),	(1924, 2)
University of Michigan Medical School		(1918)	Mississippi
Western Reserve University School of Medicine		(1909)	Colorado
University of Pennsylvania School of Medicine	(1925) Pennsylvania	(1925, 2)	Mississippi
Meharry Medical College		(1908)	Georgia, (1919) Kentucky
Vanderbilt University School of Medicine		(1925, 5)	Tennessee

California July Examination

Dr. Charles B. Pinkham, secretary of the California Board of Medical Examiners, reports the written examination held at San Francisco, July 12-15, 1926. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Of the 158 candidates examined, including 4 who took the March examination, 149 passed and 9 failed. Fifty-seven candidates were licensed by reciprocity since March and 5 by endorsement of their credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
College of Medical Evangelists	(1925) 79.8,	(1926)	76
Stanford University School of Medicine	79.7, 79.8, 80.6, 80.7, 81.8, 81.9, 82.2, 82.6, 83, 83.7, 84, 84.1, 84.4, 85.6, 85.9, 86, 86.1, 86.2, 86.4, 86.7, 87.4, 87.6, 87.7, 89.3	(1926)	78.7,
University of California Medical School	77.2, 77.3, 78.3, 78.8, 78.9, 79.3, 79.4, 79.7, 80.4, 80.7, 81, 81.1, 81.1, 81.4, 81.8, 82.3, 82.3, 82.6, 82.9, 83.3, 83.4, 83.7, 83.9, 84, 84.1, 84.1, 84.4, 84.9, 85, 85.1, 85.1, 85.1, 85.1, 85.2, 85.2, 85.3, 85.4, 85.6, 85.7, 86.4, 86.4, 86.4, 87.2, 89.1	(1926)	76.6,

University of Colorado School of Medicine.....(1925) 82.4
George Washington University Medical School.....(1925) 83.7
Loyola University School of Medicine.....(1926) 75.2, 76.3, 81.3, 82.4
Northwestern University Medical School.....(1908) 87.3, (1915) 82.3, (1925) 78.3, (1926) 76.6, 79.3, 80.9
Rush Medical College.....(1921) 91.3, (1924) 80.7, (1925) 78.3, 82.9, 87.1, (1926) 87.1, 87.2, 89.2
University of Illinois College of Medicine.....(1916) 93.3, (1925) 81.2, (1923) 82.8, (1926) 82.3
University of Louisville School of Medicine.....(1926) 76, 81.1
Boston University School of Medicine.....(1925) 81.1
Harvard University.....(1921) 86, (1923) 82.7, (1926) 88.9
University of Michigan Medical School.....(1924) 81
University of Minnesota Medical School..(1924) 78.6, (1926) 84.3
St. Louis University School of Medicine.....(1924) 82.8, (1925) 75, (1926) 79.1, 80.4, 82, 82.7, 84.9, 85
Washington University School of Medicine.....(1925) 76.1, 83.6
Creighton University College of Medicine.....(1925) 77.2
University of Nebraska College of Medicine.....(1924) 76.9, (1925) 82.3, 83.4
Cornell University Medical College.....(1926) 84
New York Homeopathic Med. College and Flower Hosp..(1925) 85.7
University and Bellevue Hospital Medical College.....(1925) 81.9
University of Oregon Medical School.....(1925) 79.4, 83.4, 84, (1926) 76.8, 80, 81.8, 83.6
Jefferson Medical College of Philadelphia.....(1925) 83.4
University of Pennsylvania School of Medicine.....(1923) 86.4, (1926) 79.7, 88.6
Woman's Medical College of Pennsylvania..(1924) 81.3, (1925) 77
Baylor University College of Medicine.....(1926) 82.2
University of Texas Department of Medicine.....(1925) 83.7
Marquette University School of Medicine.....(1926) 80
University of Manitoba Faculty of Medicine.....(1926) 86.3
University of Toronto Faculty of Medicine.....(1923) 79.9
Western University Faculty of Medicine.....(1922) 78.6
University of Brussels, Belgium.....(1922)* 87.8
Licentiate in Medicine and Surgery of the Apothecaries Society of London, England.....(1925) 77.8
University of Berlin, Germany.....(1916)* 80.7
University of Göttingen, Germany.....(1925) 75
University of Munich, Germany.....(1917) 77.1
National University of Ireland, Dublin.....(1919)* 83.2
National School of Medicine, Mexico.....(1924) 75.2
University of Moscow, Russia.....(1918)* 76

College	FAILED	Year Grad.	Per Cent
College of Medical Evangelists		(1925)	71.8
Loyola University School of Medicine		(1925)	73.9
University of Maryland School of Medicine		(1917)	58.2
Eclectic Medical College, Cincinnati		(1926)	67.7
National University of Athens, Greece		(1923)*	71.9
University of Budapest, Hungary		(1922)*	70.6
University of Lisbon, Portugal		(1923)	65.8
University of Saratov, Russia		(1917)*	65.7
University of St. Petersburg, Russia		(1902)*	57.8

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Stanford University School of Medicine		(1917)	Washington
Gross Medical College, Denver		(1896)	Colorado
University of Colorado School of Medicine		(1913)	Texas
Bennett College of Eclectic Med. and Surg., Chicago		(1904)	Illinois
Hahnemann Medical College and Hospital, Chicago		(1897)	Wisconsin
Northwestern University Medical School	(1914) Montana, (1916) Iowa	(1907)	Nebraska
Rush Medical College	(1923) Mississippi	(1900) Illinois, (1922)	Oregon
State College of Phys. and Surgs., Indianapolis		(1907)	Indiana
Medical College of Indiana, Indianapolis		(1902)	Indiana
State University of Iowa College of Medicine	(1902), (1904) Iowa	(1897)	Illinois
University of Kansas School of Medicine		(1917)	Missouri
Hospital College of Medicine		(1894) Wisconsin, (1902)	Idaho
College of Physicians and Surgeons, Baltimore		(1882)	Colorado
Boston University School of Medicine		(1908)	Mass.
Harvard University		(1907) Massachusetts, (1920)	Wisconsin
Tufts College Medical School		(1914)	Mass.
Detroit College of Medicine and Surgery		(1907)	Michigan
University of Michigan Medical School		(1906) Ohio, (1916)	Michigan
St. Louis Univ. School of Med.		(1916), (1918), (1925, 3)	Missouri
University Medical College of Kansas City		(1908)	Missouri
Washington University School of Medicine		(1925)	Missouri
John A. Creighton Medical College		(1915)	Nebraska
Creighton University College of Medicine		(1925, 2)	Nebraska
University of Nebraska College of Medicine		(1923, 2)	Nebraska
Albany Medical College		(1907)	New York
Columbia University College of Phys. and Surgs.		(1904)	New York
Cornell University Medical College		(1911)	New York
University and Bellevue Hospital Medical College		(1916)	New York
University of Buffalo Department of Medicine		(1916)	New York
Cleveland Homeopathic Medical College		(1906)	Ohio
Western Reserve University School of Medicine		(1923)	Ohio
University of Oregon Medical School		(1914)	Oregon
Jefferson Medical College of Philadelphia		(1914)	Penna.
Temple University Department of Medicine		(1918), (1919)	Ohio
University of Pennsylvania School of Medicine		(1922)	Hawaii
Western Pennsylvania Medical College		(1905)	Penna.
University of Tennessee College of Medicine		(1917)	Tennessee
University of Vermont College of Medicine		(1895)	Maine
Marquette University School of Medicine		(1914)	Wisconsin
McGill University Faculty of Medicine		(1909)	Mass.
University of Toronto Faculty of Medicine		(1924)	New York

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
George Washington University Medical School		(1906)	U. S. Army
St. Louis University School of Medicine		(1904)	U. S. Army
University of Pennsylvania School of Medicine		(1912)	U. S. Navy
Detroit College of Medicine and Surgery		(1907)	U. S. Navy
Vanderbilt University School of Medicine		(1912)	U. S. Army

* Verification of graduation in process.

Book Notices

PHYSICAL THERAPY IN DISEASES OF THE EYE, EAR, NOSE AND THROAT: With Chapters on Some Borderline Affections. By Abraham R. Hollender, M.D., Attending Otolaryngologist, American Hospital of Chicago, and Maurice H. Cottle, M.D., Attending Otolaryngologist, Illinois Masonic Hospital at Chicago. Cloth. Price, $5. Pp. 307, with 81 illustrations. New York: Macmillan Company, 1926.

Beginning with definitions and descriptions of electrophysical agents, and employing a terminology which has not as yet been established adequately in any of these fields, the authors proceed to a discussion of the application of these methods in the treatment of diseases in the regions mentioned in the title. Their outlines of apparatus are in general adequate, although exact evidence as to the physiologic and pathologic changes produced by the application of these methods is hardly sufficient on which to found any definite statement as to their real virtues. The section on treatment suffers, as do most books on special therapy, by the fact that the special technic is used in numerous instances combined with well established therapeutic methods which frequently yield good results in the absence of special therapy. The statement is made that diathermy offers great help in the treatment of diseases of the optic nerve, without however, citation of any case material to prove the value of the method. The section on diseases of the eye is marked by innumerable typographic errors, particularly in the spelling of proper names. In view of our present knowledge, even the hint that otitis media may be treated without paracentesis in the presence of a bulging ear-drum is quite unwarranted, though the patient himself may resist surgical treatment. Again, the combination of ultraviolet rays, mercurochrome-220 soluble, drainage and suction hardly offers opportunity to determine the exact value of any one of the procedures used in relation to the others. The authors give commendation to the claims of Richardson and of Stokes as to the value of roentgen rays in treating deafness of unknown etiology, although the views of these authors have not obtained serious medical support. They also accept the arguments of Sampson for the use of ultraviolet rays in overcoming roentgen-ray burns, although these arguments have in general been discredited. The chief value of this work lies in the presentation of technical methods and apparatus, the conclusions being somewhat beyond the bounds of experimental and clinical evidence.

TAFELN MIT UMSCHLAGFARBEN ZUM NACHWEIS VON RELATIVER ROT- UND GRÜNSICHTIGKEIT. Von Dr. med. Ernst Wölfflin, a. o. Professor an der Universität Basel. Cloth. Pp. 8, with 8 plates. Leipsic: Georg Thieme, 1926.

With these charts, an endeavor is made to determine clinically the upper limits of red and green color perception. Absolute red and green color blindness may be detected immediately by the use of the Stilling charts; weakness of red and green perception is to be detected by these new faintly colored charts. But, in the foreword, the author warns that they may be used only between 10 a. m. and 3:30 p. m., and even then only in a gray tinted room with north exposure. Such limitations condemn them offhand for a modern metropolitan practice, where daylight is available only at so much per square foot. Theoretically, the use of such refined methods is appealing; but practically it is questionable whether these charts will ever come into extensive application.

LABORATORY OUTLINES IN BACTERIOLOGY AND IMMUNOLOGY. By John F. Norton, Ph.D., Associate Professor of Bacteriology, The University of Chicago, and I. S. Falk, Ph.D., Assistant Professor of Bacteriology, The University of Chicago. Cloth. Price, $2. Pp. 114. Chicago: University of Chicago Press, 1926.

The need for frequent revision and replacement of laboratory methods justifies—in fact, calls for—the issue of new manuals and guides in all live laboratory subjects. This book represents the practice in the University of Chicago Department of Bacteriology, and will doubtless be found useful in a much wider field. It is admirably printed and remarkably free from the typographic errors that are so confusing to beginning students. In a new edition the book

might well be expanded, especially the material dealt with in the first ten chapters, in which a laudable desire for conciseness has possibly been carried too far. It is well to remember that many students take in and retain better what is furnished them through the eye than through the ear. It seems also that the number of reading references might profitably be increased. If kept up to date, this feature is most useful for the more active-minded students.

DIAGNOSTIK UND THERAPIE DER KINDERKRANKHEITEN, MIT SPEZIELLEN ARZNEIVERORDNUNGEN FÜR DAS KINDESALTER: Ein Wegweiser für den praktischen Arzt. Von Prof. Dr. F. Lust, Direktor des Kinderkrankenhauses (Bad. Landesanstalt für Säuglings- und Kleinkinderfürsorge) in Karlsruhe. Fourth edition. Paper. Price, 10.50 marks. Pp. 508. Berlin: Urban & Schwarzenberg, 1926.

This is essentially a practical book for the pediatrician and especially the general practitioner doing some pediatrics. Although the title indicates a book on diagnosis and treatment, the emphasis is predominantly on treatment. The diagnosis and differential diagnosis are mostly in outline or compend form. More attention is given to the diagnosis of strictly pediatric conditions than those that occur also in the adult. The treatment is definite, though conservative in the sense that whims of the author have not influenced the accepted standards. The first part of the book is divided into two sections. The first section is devoted to the outline, diagnosis and detailed treatment of the various infants' and children's diseases according to the organs or structures affected. The second section describes therapeutic technic, such as methods of blood transfusion, baths, breathing exercises and inhalations. The second part of the book is also divided into two sections, the first of which is a miniature pediatric pharmacopeia. Almost all useful drugs are listed, with their synonyms, physical properties, uses, dosages and antidotes. Besides giving general rules for the dosages the author divides the dosages into four groups, that for infants, children from 2 to 5 years of age, school children from 6 to 12, and adults. He also gives the maximum dose for adults. If a drug cannot be used for infants, the dosage for this group is omitted. The preparations of certain infant foods are described. The second section is devoted to classification, description, location, season, number of beds and physicians in charge of sanatoriums for children in various parts of Europe. This portion of the book is of interest only to German physicians.

PRACTICAL MATERIA MEDICA AND PRESCRIPTION WRITING. By Oscar W. Bethea, M.D., Ph.G., F.C.S., Professor of Clinical Therapeutics, Tulane School of Medicine. Fourth edition. Cloth. Price, $4.50 net. Pp. 498. Philadelphia: F. A. Davis Company, 1926.

This book, devoted to the teaching of prescription writing, is divided into three parts. The first contains an alphabetical list of drugs, giving the data required for prescribing them and numerous illustrative prescriptions. The latter strike one as unnecessarily complex in a number of instances, the majority of them having four or more ingredients. The second part takes up the principles of prescribing. The use of the metric system is advocated. The necessity for the medical student to be familiar with the use of Latin in prescription writing is stressed. The third part gives reproductions of actual prescriptions illustrating common errors and of the same prescription written as it should be. There is also an appendix giving problems in prescription writing. The whole book is a serious attempt to teach prescription writing in the conventional manner. One may regret that not more attention is given to the general principles underlying the technic of medication.

NEUERE ERGEBNISSE DER PHYSIOLOGIE: In 22 Vorlesungen für Aerzte, Biologen und ältere Studierende. (Eine Ergänzung zu den Lehrbüchern der Physiologie). Von Dr. Phil. et Med. Ernst Gellhorn, a. o. Professor der Physiologie an der Universität Halle, A. S. Paper. Price, 30 marks. Pp. 446, with 113 illustrations. Leipsic: F. C. W. Vogel, 1926.

This book may be described as an excellent postgraduate course of lectures on recent advances in physiology. As the lectures are directed to physicians, biologists and advanced students, the author assumes on the part of the reader familiarity with the elementary facts and general principles of physiology, as outlined in standard textbooks. The author brings together the newer data in physical, chemical and biologic research, and attempts, with critical acumen and lucidity, to restate the mechanism of the living processes in light of these advances. The volume will be found helpful and stimulating to all physicians and biologists familiar with the German language.

SOCIAL WORK A FAMILY BUILDER: A Text-Book for Nurses, Dietitians, Home Demonstration Agents, Home Economists, and Special Teachers. By Harriet Townsend, Lecturer in Social Science at Teachers College, Columbia University. Cloth. Price, $2.25 net. Pp. 247. Philadelphia: W. B. Saunders Company, 1926.

Present-day civilization with its vast production has a dehumanizing influence. Progress has little interest in the survival of the unfit. The purpose of social work is to determine human rights and to protect those rights from inhuman invasion. Assistance unwisely administered is a menace leading to pauperization not only of the persons concerned but of all who may be influenced by the specific instance. The modern social worker says that the family is the supreme unit and that it is the duty of the social worker to aid the maintenance of the family at a suitable standard of living. As a textbook in this field, the present volume adequately defines basic principles, and indicates, through case reports, methods and procedures to be followed in typical instances. Concluding chapters provide special topics for discussion, and a brief bibliography to important new considerations of the subject.

DIE NARKOSE IN IHRER BEDEUTUNG FÜR DIE ALLGEMEINE PHYSIOLOGIE. Von Hans Winterstein, Professor der Physiologie und Direktor des physiologischen Instituts der Universität Rostock. Zweiter Band—Monographien aus dem Gesamtgebiet der Physiologie der Pflanzen und der Tiere. Herausgegeben von M. Gildemeister, et al. Second edition. Paper. Price, 28.50 marks. Pp. 474, with 8 illustrations. Berlin: Julius Springer, 1926.

This describes the physiologic action of anesthetics, with little or no reference to their use in medical practice. The first half of the volume presents the detailed data on the action of anesthetics on organs and organ functions of animals and plants; then follows the attempt to explain these actions on the basis of the known chemistry of the anesthetics, and the known structure and function of living forms. The monograph is useful and valuable to pharmacologists and physiologists as well as to biologists. And the physician who is curious about one of his important tools will find it informative, challenging, and hence valuable reading.

CLINICAL PEDIATRICS. By John Lovett Morse, A.M., M.D., Consulting Physician at the Children's, Infants' and Floating Hospitals, Boston. Cloth. Price, $9 net. Pp. 848, with 180 illustrations. Philadelphia: W. B. Saunders Company, 1926.

"This book," says Dr. Morse, "was written primarily for my own amusement, not with the idea of enlightening the world or of adding anything to the sum of human knowledge." He has limited himself to conditions with which he has had personal experience, and presents therefore a textbook on the diseases of children which is essentially his own. He has, however, apparently called freely on the literature of this subject for important data in blood chemistry and on the chemical biology of milk. He expresses his views definitely and succinctly. "Goat's milk," he says, "is no more suitable for the feeding of infants than cow's milk." Dr. Morse recognizes the alleged lesser susceptibility of the goat to tuberculosis, but considers this fact of no importance, saying, "No baby should ever be given milk which is not known to come from nontuberculous cows. . . ." His book throughout is full of sound common sense. He urges that diphtheria be treated with antitoxin, avoiding medicinal measures in the uncomplicated case except for irrigations properly carried out by a trained nurse. He advocates the use of fresh air and sunlight, but condemns whisky and vaporization. For large amounts of membrane he prefers prompt intubation, preferring the term "to intube" the child rather than "to intubate." The section on scarlet fever is modern and complete, recognizing the fact that much remains to be learned concerning the prevention and treatment of this disease with the newer biologic accessories. In general, the book is an excellent guide for the young practitioner either in general medicine or in pediatrics. Its superlative common sense makes it superior to many more comprehensive and, at the same time, more theoretical volumes covering the same field.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits.

MODERN CLINICAL SYPHILOLOGY: Diagnosis—Treatment—Case Studies. By John H. Stokes, M.D., Professor of Dermatology and Syphilology in the School of Medicine, University of Pennsylvania. With the Cooperation of Paul A. O'Leary, M.D., and William H. Goeckermann, M.D., Section on Dermatology and Syphilology, The Mayo Clinic, and Loren W. Shaffer, M.D., and Cleveland J. White, M.D., Department of Dermatology and Syphilology, School of Medicine, University of Pennsylvania. Cloth. Price, $12. Pp. 1144, with 865 illustrations. Philadelphia: W. B. Saunders Company, 1926.

A complete and classic survey of a protean disease, constituting a real contribution to American medical literature.

ENZYMES: Properties, Distribution, Methods and Applications. By Selman A. Waksman, M.S., Ph.D., Associate Professor of Soil Microbiology, Rutgers University, and Wilburt C. Davison, M.A., M.D., Associate Professor of Pediatrics, Johns Hopkins University School of Medicine. Cloth. Price, $5.50. Pp. 364. Baltimore: Williams & Wilkins Company, 1926.

A complete review of important literature with good bibliography.

CONGRÈS FRANÇAIS DE MÉDECINE. XVIII Session Nancy, 1925. Rapports sur l'acidose. Par MM. Lucien Dautrebande, Marcel Labbé, Floride Nepveux et Karl Petrén.—Les angines de poitrine. Par MM. Louis Gallavardin et L. Richon.—Les gangrènes pulmonaires. Par MM. F. Bezançon, S. I. de Jong, Jacques Parisot et Louis Caussade. Paper. Pp. 153. Paris: Masson & Cie, 1926.

Reports of three symposiums before the French medical congress.

A DESCRIPTIVE ATLAS OF VISCERAL RADIOGRAMS. By A. P. Bertwistle, M.B., Ch.B., F.R.C.S., and E. W. H. Shenton, M.R.C.S., L.R.C.P. Introduction to American edition by M. G. Seelig, M.D., F.A.C.S., Professor of Clinical Surgery, Washington University School of Medicine. Cloth. Price, $12. Pp. 250, with 330 illustrations. St. Louis: C. V. Mosby Company, 1926.

Instructive outline for study and analysis of roentgenograms.

DIE AKUTEN EITRIGEN INFEKTIONEN IN DER CHIRURGIE UND IHRE BEHANDLUNG. Von Dr. med. Arthur Buzello, Privatdozent und Assistent an der chirurgischen Klinik und Poliklinik in Greifswald. Paper. Price, 30 marks. Pp. 495, with 175 illustrations. Berlin: Urban & Schwarzenberg, 1926.

General consideration, beautifully illustrated, of surgical treatment of infection.

ABSTRACTS OF THESES. Science series. Volume II. Submitted to the faculties of the graduate schools of the University of Chicago for the degree of Doctor of Philosophy, August 1923-June 1924, with abstracts of some theses of an earlier date. Cloth. Price, $3. Pp. 396. Chicago: University of Chicago Press, 1926.

Abstracts indicating varying interests of university departments.

CONTRIBUTIONS TO TROPICAL PHYSIOLOGY: With Special Reference to the Adaptation of the White Man to the Climate of North Queensland. By E. S. Sundstroem. University of California Publications in Physiology. Volume VI, 1926. Paper. Price, $2.50. Pp. 216. Berkeley: University of California Press, 1926.

How the white man reacts to the tropics and how he can adjust himself to them.

ZVILGSNIS I BIOLOGINES KRYPTIES ISSIVYSTYMA KLINIKOS IR PRAKTIKOS MEDICINOJE SARYSYJE SU ATSKIRU AUDINIU MIKROBU IR NAUJIKU MIKROSKOPISKAIS TYRIMAIS. By Dr. Vl. Kuzma. Paper. Pp. 84. Kaunas, 1926.

LEHRBUCH DER SPEZIELLEN PSYCHIATRIE FÜR STUDIERENDE UND ÄRZTE. Von Professor Dr. Alexander Pilcz. Seventh edition. Paper. Price, 74 marks. Pp. 330. Leipsic: Franz Deuticke, 1926.

New edition of a well established German textbook.

MEDICAL NOTES. By W. J. Tyson, M.D., F.R.C.P., F.R.C.S., Hon. Physician, Royal Victoria Hospital, Folkestone. Paper. Price, 2/6 net. Pp. 64. London: H. K. Lewis & Company, Ltd., 1926.

Random clinical observations of a British physician.

Medicolegal

Contract for Sanatorium; Good Will; Not to Practice

(Terry et al. v. Johnston et al. (Neb.), 208 N. W. R. 615)

The Supreme Court of Nebraska, in affirming a decree for the plaintiffs, says that they were the widow and infant daughter of a physician who had been the proprietor of a sanatorium, and that this was a suit in equity to protect the alleged violated rights of the plaintiffs under a contract by them to sell, and by defendant Johnson to buy, the business and property of the sanatorium. It was contended that the action was not cognizable in equity because if the plaintiffs had been damaged they had an adequate remedy at law. But a suit for an injunction to prevent a licensed physician from practicing his profession within a restricted territory in violation of his contractual obligations is one of equitable cognizance; and a licensed physician who purchases the good will and other property of a sanatorium and agrees not to practice his profession within a radius of 150 miles therefrom, if he fails to pay the purchase price and subsequently loses possession by default, may be enjoined in equity from violating his restrictive agreement, when that remedy is essential to the protection of the seller's contractual rights. An action at law on purchase-money notes representing only portions of the consideration for the sale does not afford an adequate remedy for the purchaser's breach of the contract, where unpaid, accruing, net profits of a lucrative business included in the sale are also portions of the purchase price.

Not only was the purchase price here $40,000, but, in addition, the plaintiffs were entitled to 10 per cent of the net profits for five years from the date of the sale. This was not unreasonable in view of the earning capacity of the sanatorium with its established business, advertising and good will. The owners of hospitals and sanatoriums may legally employ physicians and surgeons to perform professional services therein. And the agreement of the parties to the contract that the plaintiffs should retain title while the obligations of the defendant purchaser remained unperformed was reasonable and one that could lawfully be made. In an action at law involving a recovery for the loss of good will the evidence must contain sufficient data to enable a jury, with a reasonable degree of certainty and exactness, to estimate the actual damages. Restoration of the property to protect the plaintiff's title and security would not be complete without a full return of good will and other property rights. An action at law on the notes would not afford a full measure of recovery. The conclusion is that the trial court did not err in overruling the challenge to jurisdiction.

There are circumstances under which parties may stipulate in advance for liquidated damages in the event of nonperformance. The situation, in view of what subsequently transpired, appeared to have justified the precautions taken in the present instance, in consequence of which the district court permitted the plaintiffs to retain the payments of purchase money as liquidated damages. The plaintiffs intrusted the defendants with the control of the sanatorium for a period of five years. Under the terms of the purchase, the earnings of an established, profitable business were in the purchaser's hands. The benefits of advertising, the good will and the property rights of the institution were committed to his keeping. The temptation to serve himself at the expense of the plaintiffs was constantly present. Under his contractual rights he met and treated privately patients who called at his office. The accounts of earnings depended on services guarded by his professional privileges as a physician and surgeon. With these and other surrounding circumstances in contemplation, the stipulation for liquidated damages does not seem unreasonable.

The good will of a professional business may be legally sold in connection with other property rights to which it is attached. In making a sale of that kind reasonable restraints on the practice of a profession may be imposed, if necessary, for the protection of contractual rights. This is well established by precedent, and the reasonableness of such restraint is the

test of its validity. In the present case the plaintiffs were justified in imposing restraints to protect their security—the title to the property sold; and a licensed physician who purchases the good will and other property of a sanatorium may bind himself by an agreement not to practice his profession within a radius of 150 miles therefrom, if the restriction is necessary for the protection of the seller's contractual rights and does not injure the public by restraining trade. Moreover, a contract which fails to specify in direct terms the time limit of restraint on a physician's right to practice medicine in a restricted area is not for that reason void, a reasonable time being implied. So long as the plaintiffs or their assigns should carry on the business of the sanatorium was the period of restraint fixed by the decree in this case. This was a proper condition.

Things Not Deemed to Prove Testamentary Incapacity

(In re Lawrence's Estate (Pa.), 132 Atl. R. 786)

The Supreme Court of Pennsylvania, in directing that the contested will of a man, aged 80, be admitted to probate and in answering the question: Did the testator lack the capacity necessary to make a valid will? says that old age, sickness, distress or debility of body neither proves nor raises a presumption of incapacity. Nor will inability to transact business, physical weakness, or peculiar beliefs and opinions. Failure of memory does not prove incapacity, unless it is total or so extended as to make incapacity practically certain. A testator may not be able at all times to recollect the names of persons or families of those with whom he has been intimately acquainted. He may ask idle questions, and repeat himself, and yet his understanding of the ordinary transactions of his life may be sound. He may not have the strength and vigor of a man able to digest all the parts of a contract, yet he may be competent to distribute his property by will. It requires less business judgment to make a will than to make a gift.

There is no presumption of mental weakness arising from the fact that the will of the testator may seem to be unreasonable or unnatural in its provisions, or that it makes an unequal distribution among the next of kin, or gives the property to a person other than the natural recipient of the testator's bounty, except where the disposition is so gross or ridiculous as to give rise to a presumption of insanity. Unreasonable or unnatural disposition, with other evidence, may be used to prove incapacity, but, standing alone, it is insufficient. Such distribution may, however, become of the utmost importance when considering the question of undue influence, to which it is more closely related. A man may have no mental weakness, or entire capacity, and at the same time dispose of his property unnaturally; that is, he may give it contrary to his repeatedly declared intentions, or unequally among his kin. When this is done, a presumption of testamentary incapacity does not follow as a matter of course, and insufficient intellect must be shown.

Though the line of distinction between the rules applicable to incapacity and undue influence is ordinarily clear and well marked, there are sometimes special circumstances wherein it becomes quite shadowy; thus, where the will is made by a person of great age and infirmity, suffering from a severe affliction affecting the brain and vital powers, undue influence and incapacity may be so closely interwoven as to render it difficult, if not impossible, to separate them, when conducting a judicial inquiry, though ordinarily each depends on its own set of facts.

It was the status of this individual and his mode of life which the court must consider when attempting to discover incapacity. The court could not form a judgment on its ideas as to what this man would have done had he lived according to the standards of ordinary social life. It must endeavor, if possible, to bring its reasoning to the environment in which he lived and determine whether his actions were those of a normal man. He lived a solitary life in that he had no companions except his brother and a very occasional visitor or housekeeper. Here were two old men living for the most part alone. This seclusion may have made him uncouth in disposition, and, being unmarried, he may have become unkempt in personal attire, and careless about his habits. He never took much part in business, and permitted his brother, who was younger and more active, to handle all matters in connection with the farm. He could not make out a personal property return. Very many people of sound mind are unable to do this. It was stated that he was a harmless, senile old man, who would sit on the porch and watch people pass by, chewing tobacco, the juice from which he permitted at times to run over his clothing. But, considering that he was 80 years of age, we should not be too harsh in imposing our ideas as to what was proper for him to do. This was his life, not ours, nor the contestants'. The few people who, at intermittent periods, saw what they termed his silly grin and vacant stare and other circumstances, as related, were chance visitors. There was scarcely any evidence on which to base the conclusion that he had an unbalanced mind, and we are sometimes too apt to term smiles as silly grins and study as vacant stares. His brother and a horse were the only living things around; there is small wonder that he discussed them. Then he waved at passersby. This is not an uncommon habit among the best of people. A little more of its cultivation would be better for the world. Some testimony was given as to countryside reputation or the talk among neighbors. This is the normal talk about people who live a secluded life, but such evidence is not competent to establish incapacity.

Pertinency of Evidence in Case of Burned Child

(Norwood Hospital v. Jones (Ala.), 107 So. R. 858)

The Supreme Court of Alabama, in reversing a judgment for damages rendered in favor of the plaintiff, who was born in the defendant hospital and not many hours afterward was burned on his hip and thigh by a hot water bottle, says that the question was permitted to be asked a physician, against the defendant's objection that it called for a speculative answer, if it is not a fact that scars and injuries from burns are liable to produce ulcers or cancerous growths. The physician answered in the affirmative, stating that scarred tissue does not have as much circulation, as much nutrition, as parts of the body not scarred, and therefore is more liable to make ulcers, and in a good many cases cancers have developed in the seats of the scars. Then, on being asked as to what are the characteristics of the physical condition of scars of this kind in the course of time, after a person has received one, the physician answered:

> Chronic ulcers and probably cancer, about characteristics of them, that is the same—a contraction and drawing of the limbs, interference of circulation and nutrition producing atrophy, depending on the location. Of course, that will produce a more or less broken balance of the body, also may draw one hip up and the other go down.

The testimony of the expert as contained in the answers to those questions set out was not conclusive, but merely offered as the basis of a reasonable inference that the jury might draw after its consideration with the other evidence, weighed and tested by the common observation and experience. The jury was instructed so to weigh and consider the opinions the experts gave. The physician was entitled to give his opinion, having just examined the child, whose injuries had been viewed by the jury. This court will not reverse for the admission of foregoing evidence (apparently referring to the first question and answer) illustrated and made relevant by the subsequent question and answer. The opposite party had full opportunity of a cross-examination.

Another physician, after having testified that he had treated the child and had tried to graft new skin on the burned area, was permitted, over the defendant's objection, to answer affirmatively a question as to whether he had used an anesthetic or put the child to sleep to make the grafts. It was material to the inquiry that the physician had used an anesthetic or put the child to sleep in attempting to make the skin grafts; it tended to show the extent and character of the injuries sustained, physical condition, and treatment by the attending physician.

But there was error in the rulings when the objection and motion to exclude the physician's answer were overruled when, after he had stated that he had instructed the nurses to give the child paregoric to relieve its pain and crying on

account of the burn, he was asked whether three or four doses of paregoric a day was not quite a quantity to give a child—would have the effect of an opiate to a certain extent, and the physician answered that it was an unusual amount of opiate to give a child.

A letter and statement of the hospital sent to Mrs. Jones were immaterial to the inquiry as to whether there was liability or not for injuries to the child, in a suit by the latter, the letter saying: "We are inclosing a statement for your hospital expenses for the first two weeks. This amount would have been due if the child had not been burned. We shall appreciate your remittance to cover and the balance can be cared for after the case is settled."

The question asked the physician mentioned first, whether, in his opinion, that burn or the conditions produced by it would have any future material effect on the child's life or physical well being, and the physician's answer: "It is possible, yes, and I think probably will" were insufficient facts on which to base recoverable damages for the future loss of earning power. Such damages were under this evidence speculative—merely a probable effect on his life and well being. Furthermore, there was error in submitting to the jury "any impairment" of plaintiff infant's "earning capacity" when he had reached his majority and occasioned by the injury inflicted at his birth. In the absence of evidence tending to show loss of earning power because of a personal injury, the instruction to the jury should not mention such a loss as a proper element of damages.

Death from Administered Procaine Hydrochloride—"Idiosyncrasy"

(Mutual Life Ins. Co. v. Dodge (U. S.), 11 Fed. R. (2d) 486)

The United States Circuit Court of Appeals, fourth circuit, in affirming a judgment in favor of the beneficiary of a life insurance policy, says that the only part of the policy which needed to be considered was the provision in it for the payment of double the face of the policy, if death resulted directly from bodily injury, independently and exclusively of all other causes, and if such injury should be effected solely through external, violent and accidental means; "provided, however, that this double indemnity shall not be payable . . . if such death result . . . directly or indirectly from bodily or mental infirmity or disease of any sort." The insured's death resulted from paralysis of the respiratory center, caused by the local administration of procaine hydrochloride preliminary to an operation for the removal of the tonsils. The evidence was that he was in good health and had no bodily infirmity or disease, except the diseased condition of his tonsils, which admittedly did not contribute to his death. The insured was a physician himself, who had observed the operating surgeon use procaine hydrochloride in operations performed on other patients. He knew that it was to be used as a local anesthetic in his case, and it was applied in the usual manner. It was admitted that ordinarily procaine hydrochloride is absolutely harmless, and the evidence was that it proved fatal to the insured because, unknown to himself and the operating surgeon, he had an idiosyncrasy or hypersusceptibility to the drug.

This court thinks that the trial judge was correct in overruling the defendant's motion for a directed verdict, and in instructing the jury that if it should find that there was injected into the insured a quantity of procaine hydrochloride for the purpose of inducing anesthesia, and that the natural and probable effect of procaine hydrochloride administered in the manner and in the quantity used in this case was to induce local anesthesia without injury to the patient, and if it should further find that by reason of a bodily idiosyncrasy of the insured he was unusually susceptible to the drug, which susceptibility was unforeseen and unexpected, and the action of the drug was to cause death, then the verdict should be for the plaintiff.

This court thinks that not only was the death of the insured an "accidental death," but that it was also a death caused by "accidental means," within the meaning of the double indemnity clause. It was not the natural and probable consequence of the administration of the procaine hydrochloride. Death does not ordinarily follow, and cannot reasonably be anticipated, from the use of the drug. Death was produced in the case of the insured by means that were neither designed nor calculated to cause it. It was not the result of design, could not have been anticipated, and was produced by an unusual combination of fortuitous circumstances. In the act that preceded the death there was something unforeseen, unexpected and unusual; namely, the application of the procaine hydrochloride to one who had an idiosyncrasy or hypersusceptibility to the drug. It was true that the surgeon intended to apply the drug and the insured intended that he should apply it; but neither intended its application to a body possessed of the idiosyncrasy. Death resulted because of the application of the drug in ignorance of this peculiarity in the object acted on, and was a result not calculated nor intended, and one that could not reasonably have been foreseen.

Was the indiosyncrasy of the insured a bodily infirmity? This court thinks not. The uncontradicted testimony of the experts examined in the case was that it was not an infirmity but a peculiarity. If there were any question about the matter, it would seem to be a question of fact; and with the evidence all one way it was within the province of the court to instruct the jury as to its finding with regard to it. But, apart from that, this court thinks that the court would have been justified in holding, as a matter of law, that the idiosyncrasy of the insured as explained by the experts was not a bodily infirmity within the meaning of the double indemnity clause. The words "bodily infirmity or disease" are frequently used in policies of insurance and have a well understood meaning. They are construed to be practically synonymous, and to refer only to an ailment or disease of a settled character.

The defendant contended that the idiosyncrasy of the insured, even if it is not viewed as a bodily infirmity, was a contributing cause of his death. The fault of this position lay in ascribing substantive reality to the indiosyncrasy, which was merely a term used to describe the behavior of the body when brought into contact with the drug. The idiosyncrasy was but the "condition"; the administration of the procaine hydrochloride was "the moving, sole and proximate cause" of the death.

Judicial Knowledge that Tuberculosis Increases Risk

(Metropolitan Life Ins. Co. v. Hyche (Ala.), 108 So. R. 40)

The Supreme Court of Alabama, in reversing a judgment rendered in favor of plaintiff Hyche on a policy of life insurance, says that under the pleadings it was competent and material for the defendant insurance company to show in what condition of health the insured was at the date of her application and at the date on which the policy was issued. The witness was a medical expert and competent to answer the defendant's question "whether tuberculosis was more ravaging among the colored race than among the white"; but the comparison which the defendant thus sought to set up was foreign to any issue in the case, and the trial court properly sustained the plaintiff's objection to the question and excluded the witness' affirmative answer. The insured was a colored woman, it was true, but the only proper issue as to her state of health was whether tuberculosis increased the risk of loss in her case. That question the expert witness answered in the affirmative, and, besides, in agreement with the court's judicial knowledge of the subject.

Society Proceedings

COMING MEETINGS

District of Columbia, Medical Society of, Washington, D. C., Dec. 1. Dr. C. B. Conklin, 1718 M Street, N. W., Washington, D. C., Sec'y.
Isthmian Canal Zone, Medical Association of, Ancon, Dec. 21. Dr. Lawrence Getz, Hospital Santo Tomas, Panama City, Panama Canal Zone, Secretary.
Philippine Islands Medical Association, Manila, Dec. 14-17. Dr. I. Concepcion, College of Medicine and Surgery, Manila, P. I., Secretary.
Radiological Society of North America, Milwaukee, Nov. 29-Dec. 4. Dr. Robert J. May, 5005 Euclid Avenue, Cleveland, Secretary.
Society of American Bacteriologists, Philadelphia, Dec. 28-30. Dr. James M. Sherman, Cornell University, Ithaca, New York, Secretary.
Southern Surgical Association, Biloxi, Miss., Dec. 14-16. Dr. R. L. Payne, Medical Arts Building, Norfolk, Va., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Pathology, Boston

2: 341-486 (Sept.) 1926

Vascular Mechanism of Spleen. W. L. Robinson, Toronto.—p. 341.
*Etiology of Haverhill Fever (Erythema Arthriticum Epidemicum). F. Parker, Jr., and N. P. Hudson, Boston.—p. 357.
So-Called Endothelial Blockade with Collargol. F. W. Stewart; F. Parker, Jr., and N. P. Hudson, Boston.—p. 357.
*Renal Infection in Pulmonary Tuberculosis. E. M. Medlar, Madison, Wis.—p. 401.
*Experimental General Peritonitis. B. Steinberg, Cleveland.—p. 415.
Diminished Resistance Following Suprarenalectomy in Rat and Protection Afforded by Autoplastic Transplants. H. L. Jaffe, New York. —p. 421.
Formation of Giant Cells in Turtle Blood Cultures. M. Cohen, Pittsburgh.—p. 431.

Etiology of Haverhill Fever.—A report of the bacteriology, serology and experimental pathology of a bacterium isolated from patients suffering with Haverhill fever is given by Parker and Hudson. Evidence is presented to show that this organism is the specific etiologic agent of the disease. The disease was traced to raw milk. The organism seems to belong to the order *Actinomcetales* (Buchanan) and in the family *Mycobacteriaceae* (Chester). Since it has characteristics incompatible with the genera of this family, a new genus is proposed, and the organism has been tentatively named *Haverhillia multiformis*. The clinical picture of this disease is (1) acute onset with toxic symptoms, such as chills, vomiting, malaise and headache; (2) an eruption, involving especially the extremities, of a blotchy somewhat morbilliform character with a tendency to petechiae, and (3) a multiple arthritis of varying but often severe degree.

Renal Infection in Pulmonary Tuberculosis.—The kidneys from thirty patients who died from pulmonary tuberculosis were examined by Medlar. Renal tuberculosis was present in twenty-two cases. Bilateral infection was the rule in every case in this series in which both kidneys were examined and tuberculous lesions were present. The origin of the kidney infection was hematogenous.

Experimental Peritonitis.—By intraperitoneal injection of a twenty-four hour culture of colon bacilli, together with an antiserum against colon bacilli, Steinberg produced acute and healing peritonitis. Previous active immunization, and passive immunization induced by intravenous administration of antiserum, prevent the formation of peritonitis when *B. coli* cultures are injected intraperitoneally.

American Journal of Psychiatry, Baltimore

6: 1-204 (July) 1926

Psychiatry and State. C. F. Haviland, New York.—p. 1.
Postencephalitic Behavior Disorders in Boys and Their Management in Hospital. E. D. Bond and G. E. Partridge, Philadelphia.—p. 25.
Study of Delirium. L. H. Ziegler, Denver.—p. 105.
*Type of Onset in Relation to Clinical Type in General Paralysis. H. A. Bunker, Jr., New York.—p. 119.
*General Paralysis Among North American Indians: Racial Psychiatry. G. S. Adams and L. Kanner, Yankton, S. D.—p. 125.
*Carbon Monoxide Poisoning: Mental and Neurologic Changes. M. C. Borman, Philadelphia.—p. 135.
*Psychoses Occurring in Relation to Childbirth. E. Kilpatrick and H. M. Tiebout, White Plains, N. Y.—p. 145.
Psychic Resemblances in Identical Twins. W. Richmond, Washington, D. C.—p. 161.

General Paralysis Onset in Relation to Type.—In a series of seventy-four cases of general paralysis analyzed by Bunker, the earliest onset of the disease was marked, in fifty-seven (77 per cent), by abnormality in the emotional sphere of one of two forms, and by irritability in twenty-nine, or a seclusive and apathetic type of reaction in fifteen; in thirteen cases there occurred first the one and then the other as an early symptom. Little correlation appears to exist between the type of onset, in this sense, and the clinical type of general paralysis which later develops, save with regard to the "manic" cases of the fully developed disease; for the patients with an "iritable" onset contributed 30 per cent of the "manic" cases as compared with 19 per cent of the latter in the group as a whole, while 100 per cent of these cases had an "irritable" rather than a "seclusive" type of onset when either of these forms of emotional alteration had a place among the earliest changes observed. In this respect the expansive cases did not differ from the group as a whole. On the part of the simple dementing cases there was, of the two, a slight tendency toward seclusiveness rather than irritability as an initial or early symptom. Loss of weight, increased tendency to sleep, and perhaps also forgetfulness, when these appeared among the earliest symptoms noted, were without significance with regard to the clinical type of paralysis which subsequently developed.

General Paralysis Among Indians.—The rarity of general paralysis among Indians being an indisputable fact, Adams and Kanner believe that it therefore admits of two very important conclusions. One is that the acceptance of the importation of syphilis from America to Europe at the time of the discovery of the New World gains a greater credence and, provided the author's deductions are right, even seems to be proved to full extent. The other conclusion is that if after a long period of time the spirochete loses the power of producing general paralysis in that race in which it has prevailed long enough, the prospects are that the white race also might finally gain a similar resistance, so that in the future general paralysis might decrease and finally also disappear among its members.

Carbon Monoxide Poisoning: Pathologic Changes.—A case of accidental carbon monoxide poisoning is reported by Borman in which the patient showed evidence of widespread central nervous system changes from which there was apparent recovery, followed again by numerous mental and neurologic disturbances with ultimate recovery, except for the mental state. The chemical alterations in the blood and the clinical tests thereof in carbon monoxide poisoning are mentioned. The anatomic changes in the central nervous system following carbon monoxide poisoning, are discussed together with the various explanations offered for their occurrence.

Psychoses and Childbirth.—In a series of seventy-two cases, Kilpatrick and Tiebout found no psychosis peculiar to childbirth. The various types occurring at this time appear to be essentially the same as psychoses occurring at other times.

American Journal of Surgery, New York

1: 1-62 (July) 1926

Diagnostic Value and Therapeutic Application of Peruterine Insufflation of Fallopian Tubes in Cases of Sterility. I. C. Rubin, New York. —p. 1.
*Physical Therapy Today. N. E. Titus, New York.—p. 15.
Etiology and Incidence of Thermal Burns. G. T. Pack, University, Ala.—p. 21.
*Snare in Abdominal Surgery. C. E. Farr, New York.—p. 26.
*Too Tight Abdominal Bandaging. J. E. Engstad, Grand Forks, N. D. —p. 27.
Traction Weight Device. D. Goron, New York.—p. 28.
*Hydrocele Muliebris. J. W. Price, Jr., Louisville, Ky.—p. 30.
*Traumatic Diaphragmatic Hernia with Intermittent High Intestinal Obstruction. H. B. Philips, New York.—p. 33.
Perforated Duodenal Ulcer with Strangulated Inguinal Hernia. J. E. Sutton, Jr., New York.—p. 35.
Fractures in Aged. W. Darrach, New York.—p. 37.
Difficulties in Reduction of Fractures of Long Bones and Principles of Treatment. J. A. Blake, New York.—p. 40.
When Is Operative Treatment of Fractures of Long Bones Justified? C. L. Scudder, Boston.—p. 43.
Cause and Treatment of Nonunion. J. M. Hitzrot, New York.—p. 50.

Physical Therapy Today.—Titus asserts that physical therapy has passed the experimental stage and has graduated from the class in which it has to prove its worth. When rationally directed by one who understands the technic and prescribed by those who understand the modus operandi, it can be counted on to produce gratifying results when applied in the general therapeutics of many conditions; and it is surprising to see how the period of convalescence can be shortened by its use.

Use of Snare in Abdominal Surgery.—Farr advocates the use of the snare in pylorectomy, and in the handling of the duodenal stump; for temporary control of hemorrhage in large pedicles, and masses of omentum; and in resections of the bowel, especially the large bowel. The end-to-end, end-to-side, or lateral anastomosis can be quickly and safely performed with a minimal chance for leakage. The great advantage of the snare is easily demonstrated, in that the wire can be loosened and withdrawn after the inversion stitch is completely placed and drawn nearly tight. In end-to-end anastomosis, the primary and secondary sutures can nearly all be placed and tied before the snares are released and withdrawn. The opportunity for contamination is almost nil. Occasionally nephrectomy is a most difficult operation because of inability to expose the pedicle and safely apply clamps. In such cases, the wire of a snare can often be laid in place and easily set home. The same is true in high amputations of the rectum. The added inch of bowel that can be safely removed in this way may prove the deciding factor for ultimate cure. A further advantage is that, if needed, the snare may be left in situ until its work is done.

Too Tight Abdominal Bandaging.—Engstad believes that only in exceptional cases is a surgeon justified in supplementing his closure technic by external support, and therefore any dressing or bandaging beyond the mere necessity of keeping the wound sterile is uncalled for, and at times fraught with pain and even danger. Gas pains are, in a large number of cases, simply bandage pains.

Hydrocele Muliebris.—Price reports the case of a woman who first noticed the presence of a painless abdominal mass four years ago. One year ago, she observed a swelling of the left labium majus, which was at first present when she was standing and which disappeared when she was recumbent. For the last four months, this swelling has been constantly painful. The mass fluctuated, could not be reduced by manipulation, and coughing transmitted to it no impulse. The swelling extended along the course of the round ligament. The patient complained of slight pain on palpation. At operation, Price found surrounding the left round ligament, beneath the peritoneum and extending into the canal of Nuck to the left labium majus, a cyst, whose wall was composed of very thin, translucent material similar to peritoneal bands. The content of the cyst was clear, straw-colored fluid.

Traumatic Diaphragmatic Hernia.—Philips records a case of traumatic displacement of the stomach into the chest which was easily recognized by roentgenographic examination, but had been overlooked for two years.

1: 63-116 (Aug.) 1926

*Posture During and Immediately After Operation: General Anesthesia. W. Meyer, New York.—p. 63.
Late Results in Empyema Thoracis in Children. A. L. Soresi, New York.—p. 68.
Some Facial Disfigurements. C. A. McWilliams, New York.—p. 76.
Fractures of Humerus. M. Weinstein, New York.—p. 80.
Early Diagnosis of Carcinoma of Rectum and Pelvic Colon. G. E. Binkley, New York.—p. 87.
Diathermy in Gonorrheal Epididymitis: Eleven Cases. O. Grant and I. H. Cutler, Louisville, Ky.—p. 92.
Importance of Pathology in Practice of Surgery. J. Schwartz, New York.—p. 95.
*Two Osteoclastic Tumors of Bony Pelvis. M. M. Pomeranz, New York. —p. 98.
*Gangrene of Hernal Sac: Case. H. T. Miller, Springfield, Ohio.—p. 103.
Separation of Epiphysis of Lesser Trochanter of Femur: Case. H. D. Sonnenschein, New York.—p. 104.

How to Avoid Postanesthesia Vomiting.—How to avoid vomiting during and after anesthesia is the main subject discussed by Meyer. He does not favor allowing the patient gradually to come out of the anesthesia on the operating table. He prefers that toward the end of the operation the patient should be under deeper anesthesia, and then, while the wound is being sewed up, the stomach tube should be introduced, and a thorough gastric lavage done. If the remnants of the lavage fluid are made to come out completely, there is then no longer any chance for vomiting, because the stomach is completely empty, and the danger of aspiration of stomach contents toward the end of or immediately after the operation is definitely eliminated. This lavage is done with the patient in a slight Trendelenburg posture. On the stretcher, when returning the patient to his bed, and in bed, Sims' posture takes the place of the Trendelenburg. Then, if he vomits on the way to his bed, the gastric contents have to flow out of his mouth; he cannot aspirate them. The only time that this rule is waived is when the operation as such, just finished, contraindicates it. To prevent the occurrence of thrombosis of the left femoral vein, which involves the possibility of a pulmonary embolism, after operation, Meyer continues posture during the after-treatment, until the patient is out of bed. The patient is put in a slight Trendelenburg posture. For the prevention of postanesthetic pneumonia, Meyer follows Bier's technic. If a patient develops symptoms of bronchitis due to ether anesthesia, and he receives 8 drops of ether in an equal amount of sterilized olive oil intramuscularly, without delay, repeated once in twenty-four hours if necessary, the development of pneumonia can be prevented.

Osteoclastic Tumors of Pelvis.—A comparative study of the effects produced by a giant-cell tumor and a malignant sarcoma in flat bones is afforded by a review of the two cases cited by Pomeranz. Both patients were adolescent males in whom a tumor developed following a trauma. In both cases, a palpable mass was demonstrated which was felt in the rectum. In both cases there was a profound anemia, and in the malignant tumor case a high polymorphonuclear count appeared to indicate an infectious process.

Gangrene of Hernial Sac.—Miller believes that his is the first case on record of strangulation of a hernial sac. It demonstrates the possibility of a hernia sac becoming so highly organized as closely to resemble a strangulated intestinal hernia.

American Review of Tuberculosis, Baltimore

14: 107-210 (Aug.) 1926

*Abscess of Lung. S. U. Marietta, Houston, Texas.—p. 107.
*Combined Artificial Pneumothorax and Thoracoplasty. C. T. Burnett, Denver.—p. 135.
*Pulmonary Activity Greatest at Apex and Least at Base. J. Walsh, Philadelphia.—p. 142.
Chemical Study of Bacteria: XI. Development of Systematic Analytic Method for Comparative Study of Bacterial Cells. T. B. Johnson, New Haven, Conn.—p. 164.
Effect of Beta-Rays on Bacterial Growth. C. H. Boissevain, Colorado Springs.—p. 172.
Certain Historic and Epidemiologic Observations on Tuberculosis. D. B. Armstrong, New York.—p. 177.
Tuberculous Infection in Northeastern Minnesota. A. T. Laird, L. G. Guyer and W. Bailey, Nopeming, Minn.—p. 193.
Centenary of Brehmer's Death. S. A. Knopf.—p. 207.

Abscess of Lung.—Of the seventeen cases of lung abscess reported on by Marietta, fifteen were cases of single abscess and two were cases of multiple abscess. The etiology in one case was extension from an amebic liver abscess, in six cases it was a lobar pneumonia; in one case the abscess followed tonsillectomy, and in another case, bronchopneumonia. In eight cases, the etiology was undetermined. The infecting micro-organisms were the streptococcus in three cases, the pneumococcus in four, and mixed streptococcus and staphylococcus in three; in seven cases the cause was unknown. Of the seventeen patients seven were cured, two improved, one unchanged, and two remained in the hospital; there were five deaths, a mortality rate of 33.3 per cent. The mortality among the cases coming into the hospital as single abscess cases and in which hospitalization has been completed was three out of thirteen, or 23 per cent. All of these patients died of complications, one of suppurative pericarditis and nephritis, living only three days after admission. The mortality among patients coming into the hospital as multiple abscess cases was 100 per cent (two cases).

Combined Artificial Pneumothorax and Thoracoplasty.—Burnett reports the case of a man, aged 33, who has been under observation nearly one year, carrying an induced pneumothorax practically all of this time, and on whom a thoracoplastic operation was performed in order to effect a collapse of the upper lobe, which had not been accomplished by the pneumothorax.

Pulmonary Activity.—Walsh asserts that the functional activity of the lung is greatest at the apex and gradually diminishes to the base, where it is least. Hence, the development of chronic pulmonary tuberculosis in the form of the

"Laënnec lung," of chronic hypertrophic emphysema and of anthracosis, is more readily understood. In addition, something is added to the pathogenesis of lobar pneumonia in that it develops by predilection in the part of the lung where the respiratory activity is least and the circulation more readily becomes stagnant.

Archives of Internal Medicine, Chicago

38: 279-412 (Sept.) 1926

*Occurrence of Benign Glycosuria in Diabetic Families. J. E. Holst, Copenhagen.—p. 279.
*Pernicious Anemia, Achylia Gastrica and Combined Cord Degeneration and Their Relationship. R. R. Grinker, Chicago.—p. 292.
*Effect of Atropine on Gastric Function in Man. C. S. Keefer and A. L. Bloomfield, Baltimore.—p. 303.
*Treatment of Polycythemia Vera (Erythremia) with Phenylhydrazine. G. E. Brown and H. Z. Giffin, Rochester, Minn.—p. 321.
Pathogenesis of Lipoid Nephrosis. H. Elwyn, New York.—p. 346.
Epigastric Pulsation. Diagnosis of Arrhythmia Cordis Through Epigastriogram. N. Fukui, Tokyo.—p. 360.
*Mycotic Aneurysm of Aorta. F. M. Smith and G. H. Hansmann, Iowa City.—p. 367.
*Pharmacology and Therapeutics of Novasurol. A. M. Serby, Chicago.—p. 374.
*Basal Metabolic Rate in Cases of Chronic Cardiac Disease and in Cases of Hypertension. S. Shapiro, New York.—p. 385.
*Use of Sodoku in Treatment of General Paralysis. H. C. Solomon, A. Berk, M. Theiler and C. L. Clay, Boston.—p. 391.
Acute Cocaine Poisoning and Its Treatment in Monkey (Macacus Rhesus). A. L. Tatum and K. H. Collins, Chicago.—p. 405.

Benign Glycosuria in Diabetic Families.—In eleven families described by Holst, both diabetes mellitus and nondiabetic glycosuria occurred. The glycosuria occurring in the diabetic families was of no definite type, but comprised cases due to alimentary hyperglycemia as well as the renal form. The association of diabetes and nondiabetic glycosuria was observed so frequently that Holst is convinced that it could not be fortuitous, but must have depended on an hereditary biologic relationship.

Relation of Pernicious Anemia, Achylia Gastrica and Combined Cord Degeneration.—Among seventy-four cases of pernicious anemia, Grinker found only three cases with free acidity. One patient gave a familial history. Reviewing the histories of twelve patients with achylia, one of whom had a daughter with the same condition, Grinker was impressed with the frequency of infections. One had gallbladder disease, four had chronic rheumatoid arthritis, and two had infections of the colon. The other five had gastro-intestinal symptoms only. In one case, the cord degeneration apparently preceded the anemia by four years. Fifty-two of the patients, or about 70 per cent, complained of tingling, numbness, coldness in the extremities or sensations of pins and needles. Thirty per cent had no subjective sensory complaints, and none of these developed combined cord degeneration. Of the fifty-two who had subjective sensory changes, only twenty-four developed combined cord degeneration. Diarrhea was the first sign in six patients, two of whom had cord changes; pain in the abdomen in two, with no cord changes; dyspnea in seven, two of these having a pathologic condition of the cord; pallor in four cases, one having cord degeneration; loss of weight in five, with one cord degeneration, and weakness was the first symptom in twenty-six patients, of whom seven had combined cord disease. Nausea and vomiting marked the onset in ten cases, with one cord degeneration. There were fourteen cases beginning with tingling, numbness and stiffness, in which all but two developed cord degeneration. Eighty per cent of the patients having paresthesias as the initial complaint developed cord degeneration, while only 20 per cent of those developing paresthesias during the course of the disease had cord degeneration. In those cases with the full blown neurologic picture, the red blood cell count was found to vary from 200,000 to 4,500,000. The lack of red cells is apparently not directly related to the cord changes.

Effect of Atropine on Gastric Function.—After doses of atropine large enough to produce outspoken clinical pharmacologic effects, Keefer and Bloomfield state that the introduction of 50 cc. of 7 per cent alcohol solution is followed by a secretion of gastric juice. No definite changes in gastric motility can be ascribed to atropine in the present experiments.

Use of Phenylhydrazine in Treatment of Polycythemia Vera.—Phenylhydrazine, first used in the production of experimental anemia in animals, has been administered by Brown and Giffin to seven patients with polycythemia vera because of its specific effect in the destruction of erythrocytes. Given subcutaneously in animals, it was shown to be very toxic, but given by mouth to patients, its toxicity seems to be low. The effect of the drug on destruction of blood and the reduction of erythrocytes is definite, constant and specific, and gives symptoms indicative of a hemolytic crisis. An increase in leukocytes is stimulated by even small doses of phenylhydrazine, and this stimulation is specific. The platelet count does not seem to be appreciably affected. The effect of the drug on destruction of blood was evident for from seven to ten days after its discontinuance. Following treatment, the clinical improvement was satisfactory in all but one case in which marked hypertension persisted. Vertigo, fulness of the head, neuralgia, weakness and mental irritability all disappeared. Patients who had had pain in the legs reported complete relief. A gradual increase in the erythrocytes and volume of blood necessitated a second course of treatment, in from three to six months after the first course. As a rule, the dose effective at the time of the first treatment was equally effective in the recurrences. The drug was given in doses of 0.1 Gm. three times a day; the total amount given varied from 3.4 to 7.6 Gm., the average total being 5.7 Gm. It was estimated that each gram of phenylhydrazine brought about the destruction of an average of 6 Gm. of hemoglobin. It has been found wise to discontinue the use of the drug when the erythrocytes drop to 4,500,000, and it is estimated that destruction of blood will continue for approximately a week longer. Phenylhydrazine hydrochloride, in general, causes more consistent improvement in the symptoms and a more constant reduction in the blood volume than either radiotherapy or venesection.

Mycotic Aneurysm of Aorta.—The case reported by Smith and Hansmann presented the typical clinical manifestations of a subacute bacterial endocarditis in which *Streptococcus viridans* was the responsible organism. Even though the course was rapid, the fatal termination was hastened by the rupture of a mycotic aneurysm of the aorta just below the opening of the ductus arteriosus in embryonic life into the left chest cavity.

Therapeutics of Merbaphen.—Six cases of marked cardiac decompensation were studied by Serby. The injection of 1 cc. of merbaphen (novasurol) intramuscularly or intravenously, twice weekly, caused profuse diuresis. Diuresis appeared three hours after administration; it lasted twelve hours in young persons, and from twenty-four or forty-eight hours in elderly and weak persons. Merbaphen may induce a decrease in anasarca and an increase in uremia simultaneously. In some cases, it may not cause diuresis, although not producing any renal injury.

Heat Production in Chronic Cardiac Disease.—Of the forty-two patients studied by Shapiro, the heat production was found to be definitely elevated above normal in three cases. These patients all had dyspnea or hyperpnea which, he believes, was responsible for the increased metabolism. Cardiac overactivity, such as occurs in a heart compensating for an organic heart defect or maintaining an elevated vascular tension, does not detectably elevate the heat production.

Use of Sodoku in Treatment of General Paralysis.—Solomon et al. report on the use of sodoku in the treatment of general paralysis. Twelve paralytic patients were inoculated with *Spirochaeta morsus-muris*, the etiologic agent of sodoku. The clinical effects produced by *Spirochaeta morsus-muris* seem to offer more favorable and fewer unfavorable characteristics than does malaria. The organisms can be kept in a laboratory animal, available for inoculation at any time. The patient's reaction is less severe than it is with malaria, although a fair degree of fever is obtained. It is readily controlled by arsphenamine. There is evidence of the production of immune bodies which, at least from the theoretical standpoint, may be of some importance. The disease is less debilitating to the patient than malaria. A further value is that it can be given to patients who are more or less immune

to malaria. It is also available as an addition to the malarial therapy, and may be given either before or after malaria without any evident modification of the clinical course of either condition.

Archives of Otolaryngology, Chicago

4: 189-280 (Sept.) 1926

Pathology and Surgery of Eustachian Tube. T. H. Halsted, Syracuse, N. Y.—p. 189.
Local Treatment of Eustachian Tube. A. B. Duel, New York.—p. 196.
*Malignant Tumors of Antrum of Highmore. G. B. New, Rochester, Minn.—p. 201.
Radium in Polypoid Ethmoiditis. S. McCullagh and G. A. Robinson, New York.—p. 215.
*Iodized Oil in Diagnosis of Nasal Sinus Conditions. H. M. Goodyear, Cincinnati.—p. 223.
Interpretation of Speech by Tactual and Visual Impression. R. H. Gault, Washington, D. C.—p. 228.
Ephedrine in Nasal Disturbances. J. W. Davies, New York.—p. 240.
Acute and Chronic Otitis Media and Sinus Thrombosis. S. J. Kopetzky, New York.—p. 241.

Malignant Tumors of Antrum.—There were no operative deaths among the ninety-seven patients with malignant tumors of the antrum treated by New with cautery and radium. Of seventy patients with primary tumors, nine lost the eye on the involved side. Twenty-one of the patients are known to be alive and well from fifteen months to eight or more years after operation. Fifteen have lived more than four years. Of twenty-seven patients with secondary tumors, two lost an eye. Fourteen are known to have lived from fifteen months to eight years, nine of these more than four years. New says that by the use of cautery, in the form of soldering irons or diathermy, and by the use of radium in the treatment of malignant tumors of the antrum, operative deaths are eliminated, and more patients are cured than by previous operative methods.

Use of Iodized Oil in Diagnosis of Sinus Conditions.—Goodyear recommends the use of iodized oil as an aid to diagnosis in nasal sinus conditions, especially in cases in which there are uncertain histories of sinus infection, and when lavage yields no return of secretion. The thickness of the membranes and the presence of polypi and cystic changes can be discerned in a large percentage of cases.

Archives of Pathology and Laboratory Medicine, Chicago

2: 301-464 (Sept.) 1926

*Endotheliomas. A. Piney, London.—p. 301.
*Degeneration and Regeneration of Rectus Abdominis in Pneumonia. W. D. Forbus, Baltimore.—p. 318.
*Acute Myocardial Syphilis. W. Boyd, Winnipeg, Canada.—p. 340.
Melano-Epitheliomas of Swine. H. D. Caylor and C. F. Schlotthauer, Rochester, Minn.—p. 343.
*Cortical Heterotopia in Pontile Meninges. W. Freeman, Washington, D. C.—p. 352.
*Live Fishes Impacted in Food and Air Passages of Man. E. W. Gudger, New York.—p. 355.
Carcinoma: Grading. A. C. Broders, Rochester, Minn.—p. 376.
*Modification of Ziehl-Neelsen Staining Method for Tubercle Bacilli. F. B. Cooper, Trudeau, N. Y.—p. 382.
Neurotropic Virus. F. Breinl, Prague, Czechoslovakia.—p. 386.

Endotheliomas.—The series of neoplasms discussed by Piney demonstrates that growths of "endothelial" character may present either the signs of vasoformative activity or of production of fibrils by differentiation of their protoplasm. Both phases of cell activity may be present in any one of the tumors, although, as a rule, one manifestation is the more obvious. It is suggested that the term reticulo-endothelioma be used as a descriptive term applying to the growths in which fibril formation is a striking feature.

Changes in Rectus Abdominis in Pneumonia.—In fatal pneumonia secondary to influenza or measles, degeneration of the rectus abdominis muscle may occur as a complication. Twenty-five such cases are described by Forbus. The muscle lesion usually consists of hyaline degeneration of the contractile substance of the fibers, although abscesses may be found. The hyalinization of the muscle may result in rupture with subsequent hemorrhage. Details of the degenerative process are described. The cause of the muscle degeneration is unknown, although the evidence at hand indicates that a bacterial toxin is responsible. In the characteristic lesion, no evidence is found pointing to a localized infection in the muscle. The muscle lesion apparently is not dependent on a pneumonia due to any specific type of organism, although the cases under consideration were all due to one of three organisms—pneumococcus, streptococcus and *Bacillus influenzae*. The degree of muscle degeneration is not dependent on the duration of the pulmonary infection, but rather parallels the intensity of the infection. Following degeneration of the muscle, regenerative changes occur which apparently lead to total restoration of the affected muscle.

Acute Myocardial Syphilis.—A description is given by Boyd of a further example of the condition known as "sudden death due to exacerbation of latent syphilitic myocarditis." The patient was a woman, whereas the previous cases have all occurred in males.

Cortical Heterotopia in Pontile Meninges.—Freeman relates the case of a woman, aged 55, who developed an acute toxic psychosis, and within a few days after her admission to the hospital died of lobar pneumonia. Over the upper end of the pons on the right side was a small flattened oval mass of soft consistency and pearly pink, circumscribed, lying wholly in the meninges, and connected with the pons only by pial tissue. This mass resembled normal cerebral cortex in every way, was not invading, and had no connection with any nerves.

Live Fishes Impacted in Food and Air Passages.—The data given by Gudger show that on the coasts of France and Italy, and in India and the Far East, fishermen are accustomed to take live fishes between their teeth either to kill them by biting, or to hold them while the hands are used to free the hook or net. A fish so held, if it pricks the man's mouth with its spines, or sets up any sudden movement, will readily cause the involuntary opening of the mouth with a resultant entrance of the fish into the throat of the man. Twenty cases already on record are reviewed.

Modified Tubercle Bacillus Stain.—The technic for the modified stain, using the rapid method devised by Cooper, is as follows: The slide is flooded with stain, steamed for four minutes, and allowed to cool until the precipitate forms. This takes place in about two minutes, and may be hastened by gently blowing on the slide. The precipitate must be allowed to form, for on it depends the success of the method. It is then washed with tap water, decolorized for from one to ten minutes in acid alcohol (5 cc. of nitric acid, specific gravity 1.42, to 95 cc. of 95 per cent ethyl alcohol); washed with water, then placed for two minutes in 95 per cent ethyl alcohol; washed again, counterstained with Loeffler's methylene blue for one minute, washed, dried and examined. The method has several advantages over the Ziehl-Neelsen technic. 1. Five per cent more positive slides than by the Ziehl-Neelsen method, and many more times as many bacilli. 2. A much better defined morphology, showing the bacilli as larger and deeper red solid rods with a practical absence of beaded and hairlike forms. 3. A counterstain which does not superimpose on tubercle bacilli in the time required for counterstaining, and, furthermore, gives slides of a sufficiently good transparency to make the acid-fast bacilli easily recognizable through the denser portions. 4. A more rapid method, in that the time elapsing while awaiting the necessary precipitation to take place is more than made up in the amount saved as a result of the ease and sureness of examination.

Archives of Physical Therapy, X-Ray, Radium, Omaha

7: 507-570 (Sept.) 1926

Effects of Light on Growth and Development. W. T. Bovie, Cambridge, Mass.—p. 507.
Differential Diagnosis Between Tumors and Tuberculosis of Lung. R. Lenk, Vienna.—p. 529.
Treatment of Industrial Diseases with Physiotherapy. E. C. Duval, Chicago.—p. 542.

Arkansas Medical Society Journal, Little Rock

23: 63-71 (Sept.) 1926

Surgical Pathology of Peritonitis. J. W. Kennedy, Philadelphia.—p. 63.
Ureteral Stricture. H. F. Jones, Little Rock.—p. 64.

Boston Medical and Surgical Journal

195: 605-650 (Sept. 23) 1926

*Relation of School Physician to Family Doctor. D. S. King, Boston. —p. 605.
*Surgical Aspects of Pyuria in Childhood. C. G. Mixter, Boston.—p. 615.
Diphtheria Prevention. B. White, Boston.—p. 625.

Relation of School Physician to Family Physician.—At present the majority of school heads, parents, school physicians and family physicians feel that yearly physical examinations should be made even in private day schools. In King's opinion such examinations should, however, be simple, careful, and recorded in nontechnical language. They cannot replace those of a careful family physician, and too much dependence should not be placed on them. The school physician should not exhaust himself on the examinations, but should have some interest left for the follow through. When reports are sent to parents or physicians, great discretion and tact are essential.

Surgical Aspect of Pyuria in Childhood.—When medical treatment is unavailing and focal infection has been ruled out, persistent or recurrent pyuria, in Mixter's opinion, demands urologic investigation. Cystoscopic examination with ureteral catheterization can be performed in childhood and usually in infancy without undue risk. Faulty enervation, tuberculosis, calculus and urinary stasis are underlying causes of chronic pyuria. Stasis may be the result of intrinsic lesions of the urinary tract or may be produced by pressure on the tract from without. Such lesions are usually of congenital origin. Obstruction to the urinary outflow is most frequently encountered at the ureteropelvic junction, the vesical insertion of the ureter, or in the deep urethra. Medical treatment and local measures will fail to eradicate the infection in the presence of urinary stasis. To prevent renal destruction, surgical means should be employed at the earliest possible moment to remove the obstruction and eliminate stasis.

195: 651-696 (Sept. 30) 1926

*Relationship Between Gastric Ulcer and Carcinoma of Stomach. J. S. Lawrence, Nashville, Tenn., and A. V. Bock, Boston.—p. 651.
Diagnostic Significance of Lateral Curvature of Spine Caused by Muscular Spasm. J. R. Carty, New York.—p. 654.
Dehiscence of Floor of Middle Ear. D. W. Drury, Boston.—p. 657.
*Benign Glycosuria with Hyperglycemia. E. Parsons, Rochester, Minn. —p. 660.
*Blood Sugar During Insulin Reaction. M. Smith, Boston.—p. 663.

Relationship Between Gastric Ulcer and Gastric Cancer.—Lawrence and Bock compare the clinical observations in ninety-eight cases of carcinoma of the stomach and forty-eight cases of ulcer of the stomach. Sixty-eight of the cancer patients were operated on. A positive microscopic examination was obtained in approximately one fourth of these cases. Forty out of the forty-eight cases of ulcer of the stomach came to operation. In approximately two fifths of these cases, microscopic examination was made with a positive report of ulcer. Certain very definite differences were found between ulcer and cancer. These seem to indicate that there is not a very close relationship between the two conditions. Ten per cent would seem to be a very high value to give to the cases of ulcer of the stomach which later become malignant.

Benign Glycosuria with Hyperglycemia.—A case of glycosuria which has persisted nine years without increase in severity is reported by Parsons. Sugar is excreted on restricted diets, and its excretion on unrestricted diets is no greater in proportion to the intake of carbohydrates. The blood sugar remains normal even when the diet is rich in carbohydrates, as tested by a sample obtained before breakfast. The respiratory quotient responds to a glucose meal as readily as in normal persons.

Blood Sugar During Insulin Reaction.—Smith reports the case of a boy, aged 4, who had had diabetes since he was 15 months old. He had required insulin since the sudden onset of the diabetes, and had been very difficult to control. Many combinations of diet, amounts of insulin, and division of insulin dosage had demonstrated that if he was to be kept sugar free an insulin reaction at some time of the day or night was likely to occur. He had had many reactions of varying degrees of severity, but had always responded quickly to the administration of orange juice. The reactions were apt to occur in the morning immediately on waking, even though the last previous dose of insulin had been at 6 p. m. of the day before. Such was the event during the reaction described, which was unusually severe. The boy did not respond to orange juice; instead, he vomited a large quantity of undigested material. Having never before reacted to insulin in this manner, the question was entertained that a gastrointestinal upset might account for many of the symptoms. A blood specimen was examined quantitatively for sugar by the method of Folin and Wu. There was not the slightest reduction of the alkaline copper tartrate solution during boiling or of the phosphate molybdate reagent when added. The blood sugar was zero. The determination was later repeated with the same result.

Philippine Journal of Science, Manila

30: 389-517 (Aug.) 1926

Philippine Flora: III. E. D. Merrill, Berkeley, Calif.—p. 389.
*Control of Yaws. L. Lopez-Rizal, P. Gutierrez and L. Fernandez. —p. 431.
*Serologic Estimate of Efficacy of Neo-Arsphenamine in Treatment of Yaws. R. J. Navarro, Manila.—p. 445.
*Immunity in Yaws. G. R. Lacy, Manila, and A. W. Sellards, Boston. —p. 453.
*Superinfection in Yaws. A. W. Sellards, Boston; G. R. Lacy and O. Schöbl, Manila.—p. 463.
*Some Protean Manifestations of Skin Lesions of Yaws. O. Schöbl, A. W. Sellards and G. R. Lacy, Manila.—p. 475.
*Globulin Precipitation Reaction in Yaws. O. Schöbl and J. Ramirez, Manila.—p. 483.
Clinical Modification of Yaws Observed in Patients Living in Mountainous Districts. L. Lopez-Rizal and A. W. Sellards, Manila.—p. 497.

Control of Yaws.—Yaws has been brought under control in Parañaque, a district that has been heavily infested from time immemorial. During approximately four years, 1,151 cases were treated. Lopez-Rizal et al. assert that intermittent operation of yaws dispensaries is not a satisfactory procedure for the control of the disease in very heavily infested communities. Intensive treatment and persistent vigilance, so as to assure complete recovery of existing cases, is the most important factor in the control of the disease.

Effect of Treatment of Yaws.—The Wassermann test in 101 patients with yaws treated with neo-arsphenamine at the field clinic in Parañaque was made from three months to three years after the cessation of treatment. Navarro reports that eighty-three of these gave an entirely negative reaction. Ten of them gave decidedly positive tests, two-plus, three-plus or four-plus. Of the eighty-three patients giving a negative reaction, forty-three, or 51 per cent, received only one injection. Fifty-five of the 101 patients included in this report received only one injection. Of these fifty-five cases, forty-three were negative, and four gave a one-plus reaction. Of the eighteen patients giving a positive Wassermann reaction, seven showed clinical manifestations of yaws. One of these is the single case giving a two-plus reaction, five are in the three-plus group, and one is in the four-plus group.

Immunity in Yaws.—Four yaws patients were treated with arsphenamine and, after an interval of about six months, they were inoculated with yaws. One developed a characteristic granuloma, and the others showed atypical results. Treatment with neo-arsphenamine was repeated in two of these cases, and in the other two the lesions soon disappeared spontaneously. After more than two years, these four patients were found to be free from any clinical signs or symptoms of yaws, and the Wassermann reaction was negative. They were then reinoculated with yaws, and only one developed a typical granuloma, the same one who was susceptible in the previous test. Therefore, three of these four patients showed well marked resistance to reinfection with yaws. This resistance to reinfection might be explained either by the development of an active immunity or by the continuance of a latent infection with yaws. In the absence of information permitting a final decision, Lacy and Sellards have adopted as a working basis the view that active immunity develops late in the secondary stage of yaws.

Superinfection in Yaws.—Sellards et al. have shown that, in contrast to syphilis, superinfection in yaws is possible, even after the typical primary granuloma has developed.

Skin Lesions of Yaws.—Schöbl et al. emphasize that in the skin manifestations of yaws there are, in addition to the typical granuloma, at least three other types of exanthem, distinct in themselves rather than representing different stages of one and the same lesion. All of the three atypical lesions described were observed in experimental cases in which their etiology was definitely determined.

Globulin Precipitation Reaction in Yaws.—The globulin precipitation test with distilled water was found positive by Schöbl and Ramirez in at least a 1:3 dilution in every one of the twenty-four active yaws patients examined. In certain cases the reaction was very strong, as precipitation occurred in as low a dilution as 1:1. Healed cases of yaws showed less pronounced precipitation than did the active cases, but a good many still gave positive reactions. Both qualitatively and quantitatively, the results of this test and of the Wassermann reaction did not always agree. Experimental evidence is produced that the globulin of the patient's serum which precipitates on dilution with distilled water is not the carrier of the Wassermann antibody. The practical value of the globulin precipitation reaction as a confirmatory test of clinical diagnosis of yaws in the pre-Wassermann stage, and as a useful reaction for the guidance of the extent of specific treatment necessary in a given case of yaws is strongly indicated.

Southwestern Medicine, Phoenix, Ariz.

10: 373-414 (Sept.) 1926

Fascia Lata Suture in Hernia Repair. W. O. Sweek, Phoenix, Ariz.—p. 373.
Heliotherapy in Tuberculosis. S. H. Watson, Tucson, Ariz.—p. 379.
Ureteral Calculi. C. M. Simpson, Temple, Texas.—p. 383.
Impacted Ureteral Stones. M. W. Sherwood, Temple, Texas.—p. 386.
Manifestations of Syphilis in Skin and Mucous Membranes. T. T. Clchessy, Phoenix, Ariz.—p. 388.
"Milk-Sickness" Erroneously Called "Alkali Poisoning." M. B. Culpepper, Carlsbad, N. M.—p. 391.
Attitude of Taxpayers' Association to Public Health Work. H. J. Hagerman, Santa Fe, N. M.—p. 394.
Pernicious Anemia. O. H. Brown, Phoenix, Ariz.—p. 397.

Tennessee State Medical Association Journal, Nashville

19: 29-64 (June) 1926

Genesis and Significance of Abdominal Adhesions. A. E. Hertzler, Kansas City, Mo.—p. 29.
Subacute Bacterial Endocarditis. H. J. Morgan, Nashville.—p. 33.
Cooperation of Practitioner with Radiologist. S. S. Marchbanks, Chattanooga.—p. 40.
Relapses in Malaria. W. Krauss, Memphis.—p. 43.
Ocular Diseases of Dental Origin. H. Ezell, Nashville.—p. 47.

19: 65-90 (July) 1926

Surgery of Prostate. J. B. Haskins, Chattanooga.—p. 65.
Present Status of High Voltage Roentgen-Ray Therapy. W. S. Lawrence, Memphis.—p. 69.
Antitoxin Treatment of Scarlet Fever. G. J. Levy, Memphis.—p. 73.
Present-Day Management of Scarlet Fever. A. G. Jacobs, Memphis.—p. 79.
Immunization Against Measles with Convalescent Serum. W. Yeiser, Columbia.—p. 85.

Wisconsin Medical Journal, Milwaukee

25: 417-470 (Sept.) 1926

Heliotherapy in Tuberculosis. E. A. Fletcher, Milwaukee.—p. 417.
*Congenital Intestinal Obstruction: Two Cases in One Family. S. H. Lippitt and C. W. Morter, Milwaukee.—p. 424.
*Diet in Epilepsy of Childhood. M. G. Peterman, Milwaukee.—p. 427.
Aplastic Anemia; Two Cases. F. D. Murphy and J. M. McEachern, Milwaukee.—p. 431.
Stereoscopic Head and Dental Roentgenograms. L. M. Willard, Wausau.—p. 435.
Ten Year Study of Tuberculosis Deaths. W. W. Bauer, Racine.—p. 437.
Mercuric Chloride Poisoning; Case. D. A. Brown, Madison.—p. 440.
Shoe Dye Poisoning; Case. E. H. Townsend, La Crosse.—p. 443.

Congenital Familial Intestinal Obstruction.—Lippitt and Morter report two cases of intestinal obstruction in siblings, and call attention to either a familial tendency or to an unusual coincidence.

Ketogenic Diet in Epilepsy.—Seventy patients have been given a fair trial by Peterman on the ketogenic diet. Of these, forty have been free of attacks for periods of from three months to three years. In eighteen patients, the attacks are extremely infrequent and usually follow dietary indiscretion. Six patients are not improved, and six patients are lost from observation.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Acta Scholae Medicinalis, Kioto, Japan

8: 1-154, 1925

Anatomy of Sympathetic Nervous System: I. Truncus Sympathicus Thoracalis in New-Born and in Fetus. Ganglion. Y. Matsui.—p. 1.
Significance of Biologic Action of Acids on Blood Vessels of Toad. S. Inouye.—p. 43.
*Nature of Starch: III. Starch Digestion. K. Nagai.—p. 57.
Id.: IV. Starch Iodine Reaction. K. Nagai.—p. 75.
*Choledochitis Membranacea: I. Matsuo and N. Mizuta.—p. 87.
Studies on Oddi's Sphincter and Relation Between Pancreatic Duct and Common Bile Duct of Japanese. K. Nagai and T. Sawada.—p. 91.
Dynamics of Heart (Report I): Some Studies on Pressure-Course of Heart During One Systole. N. Ishida.—p. 103.
Anatomy of Sympathetic Nervous System: II. Truncus Sympathicus Thoracalis of Adults. Y. Matsui.—p. 117.
Id.: III. Splanchnic Nerves. Y. Matsui.—p. 139.

Digestion of Starches.—The digestibility of the following four starches was investigated by Nagai: arrowroot-starch, starch of the dogtooth violet, potato, and maize starches. It was found that they are very digestible in the order stated. Hence, Nagai says, the arrowroot-starch and the starch of the dogtooth violet, especially the former, should be preferred to the other starches as the diet of patients.

Choledochitis Membranacea.—Matsuo and Mizuta propose the following nomenclature for gallbladder disease whether it is of ascending or descending infection, and also for the inflammation of the biliary tract and the jaundice due to it: cholangeitis catarrhalis, cholangeitis hemorrhagica, cholangeitis purulenta (putrida), cholangeitis necroticans and cholangeitis membranacea. When the inflammation is limited only to the common duct, it may be classed thus: choledochitis catarrhalis, choledochitis hemorrhagica, choledochitis purulenta (putrida), choledochitis necroticans and choledochitis membranacea.

Edinburgh Medical Journal

33: 533-596 (Sept.) 1926

*Failing Heart. J. Cowan.—p. 533.
*Syringomyelia with Cavities in Posterior Nerve Roots. J. D. Comrie and J. W. Dawson.—p. 566.

Failing Heart.—Forty-nine cases of chronic valvular disease without acute endocarditis in which heart failure occurred, and fifty-eight cases with acute endocarditis are the basis of Cowan's discussion. It is suggested that an acute reinfection of the valves is the most common cause of death in chronic valvular disease. The diagnosis of an acute reinfection of a chronic valvular lesion may be very difficult. In twenty-four of the patients with acute endocarditis, the onset of symptoms in the fatal illness was insidious, gradual and without cause, an incidence which is much greater than in the series of cases of chronic valvular disease without acute endocarditis, in which some special reason for the onset of symptoms could frequently be suggested. An insidious onset is well known to occur in the subacute cases of endocarditis. A full routine examination of patients is essential to making a diagnosis, for cardiac symptoms may be prominent in disease of organs other than the heart.

Syringomyelia with Cavities in Posterior Nerve Roots.—In the case quoted by Comrie and Dawson, the patient, aged 51, had led an active life until seven months before death, although she had had attacks of pains regarded as "rheumatic" at intervals for several years. The blood showed a strong positive Wassermann reaction. The first definite evidences of syringomyelia were bladder symptoms, and dissociated analgesia began to develop only about one month before death. Thereafter, sensory and motor symptoms of the usual type developed with great rapidity. The clinical diagnosis made was one of locomotor ataxia with unusual symptoms of hysterical type. After death, the lumbar region of the cord showed the characters typical of an early stage of locomotor ataxia, and, in addition, cavity formation in the upper part of the cord with associated neuroglial changes was discovered. These changes are believed, in common with the changes characteristic of locomotor ataxia found in the

lower part of the cord, to be of syphilitic origin. The lesions of syringomyelia in the upper part of the cord are presumed from the clinical history to be of the same standing in respect to duration of development as the sclerosis, meningeal inflammation, etc., in the lumbar region.

Journal of Tropical Medicine and Hygiene, London

29: 311-326 (Sept. 15) 1926

Airplane Dusting in Control of Malaria Mosquitoes. W. V. King and G. H. Bradley.—p. 311.
*Cause of Hairlessness of Man. H. N. Ridley.—p. 313.
Refutation of Statements Made by Prof. R. T. Leiper, Concerning African Schistosomes, "American" Gongylonemas, Zoo Vermin and Italian Cancer Houses. L. W. Sambon.—p. 314.

Cause of Hairlessness of Man.—Ridley suggests that the falling out of hair observed in female apes during menstruation or the breeding season, although not accounting for the denudation of the male, may have been a start in the permanent hairlessness of the body. Secondly, the loss of hair all over the body may have been due to injury caused by skin vermin. It is not difficult to keep free from such vermin when the hair is confined to the head and pubes, but it would be very difficult to do so if the body was entirely covered with hair. Lice of themselves would not cause mortality among the tribe, but if one may conceive them as acting as propagators of disease of a dangerous character, it might be fatal to a tribe to be covered with them in long hair which could not be cleaned. Both fleas and lice do carry deadly diseases; e. g., plague and typhus, trench fever and relapsing fever. Is it not possible that when primitive man became herded together, living in close contact, some disease such as those mentioned might spread so as to exterminate all those who were thickly covered with hair? An invasion of a race bearing some disease-carrying parasite might infect and exterminate any hairy race, leaving only those who, being less furnished with hair on the body, could clean off the vermin. Ridley points out that the era of the hairy Magdalenians was followed by the invasion of the neolithic Azilian race, who appear, from their introducing wheat, to have come from the East, and to have brought with them the rat, so closely associated with the plague. About this time all the hairy Palaeolithic men appear to have completely vanished.

Kenya Medical Journal, Nairobi, East Africa

3: 121-150 (Aug.) 1926

Diagnosis of Intestinal Helminth Infestation. R. Daubney.—p. 122.
Case of Oriental Sore in Indian in Uganda. A. R. Cook and R. Y. Stones.—p. 132.
Disease of African Natives Suggestive of Scurvy. C. J. Wilson.—p. 133.
Four Suggestive Cases of Enteric Fever. W. Chand.—p. 146.

Kinki Medical Journal, Kyoto, Japan

9: 1-12 (June) 1926

Pharmacologic Action of Colloidal Metals, Especially of Colloidal Silver. N. Sahako.—p. 1.
Dehydration Fever of Nurslings. S. Yunoki.—p. 1.
*Comparative Investigations of Various Syphilis Tests and My Pregnant Kidney-Extract Reaction. II. T. Ishihara.—p. 2.
*Pharmacology of Various Organ Extracts. S. Tsuruda.—p. 7.
Pharmacologic Sensibility of Extirpated Rabbit-Uterus. K. Tani and F. Hazama.—p. 8.
Serum Lipase of Pregnancy, Parturition and Puerperium: Pregnancy Toxicoses. S. Mizuhara.—p. 9.
Pain Sensibility of Female Sex Organs. S. Yamasaki.—p. 10.
Anatomic Study of Vagina of Japanese. M. Honda and T. Ishihara.—p. 11.

9: 1-41 (Aug.) 1926

Study of Fat in Blood and Lipolytic Ferment in Blood Serum of Tuberculous Pregnant Women. M. Yoshida.—p. 1.
"Chorio-Angioma" of Placenta. T. Tabata.—p. 24.
Changes in Female Genitalia Caused by Diet and Its Influence on Fertility: II. R. Susaki.—p. 25.
Roentgen-Ray Examination of Involution of Puerperal Uterus. R. Susaki.—p. 28.
Action of Various Drugs Against Epinephrine Death. N. Sahako.—p. 29.
Lymphangioma of New-Born. H. Yagi.—p. 30.
Pregnancy Toxicoses; Hyperemesis Gravidarum. F. Hazama.—p. 32.
Susceptibility of Pregnant Animals to Emetics. F. Hazama.—p. 38.
Effect of Ovary on Antibody Formation. J. Sano.—p. 40.
Pharmacologic Investigation of Chloralized Uterus. M. Shinagawa.—p. 41.

Ishihara's Test for Syphilis.—Ishihara's reaction consists in a flocculation phenomenon. He used an alcoholic extract of the kidney of a pregnant rabbit, the kidney being removed, preferably immediately after the termination of the labor. The reaction is comparable with the Wassermann reaction in results.

Pharmacology of Organ Extracts.—Tsuruda investigated the pharmacologic activity of extracts of hypophysis, thyroid, ovary, testis and placenta on uterine muscle and on blood vessels.

Lancet, London

2: 583-632 (Sept. 18) 1926

*Intratracheal Anesthesia. S. Rowbotham.—p. 583.
Physiology of Posture. R. Magnus.—p. 585.
*Blood Sugar in Normal and Diabetic Persons. C. D. Shapland.—p. 589.
*Capacity of Kidney for Concentrating Chloride. O. L. V. de Wesselow.—p. 594.
*Postoperative Tetanus with Identification of Organism. S. C. Dyke.—p. 596.
*Fulminant Case of Acute Poliomyelitis of Bulbar Type. F. C. Collinson.—p. 597.
*Complete Suppression of Urine for Three Days. A. L. Lankester.—p. 598.
*Adenoma of Jejunum Causing Intussusception. R. C. B. Maunsell.—p. 599.

Intratracheal Anesthesia.—Rowbotham asserts that intratracheal anesthesia is the method of choice for all operations on the head, nose, mouth or throat, when the anesthetist cannot maintain a satisfactory anesthesia and a free airway by the ordinary methods without seriously interfering with the surgeon. When there is blood in the upper air passages, it is a necessity—effectively preventing its entrance into the bronchi and air cells, and lessening the liability to pulmonary complications. In intrathoracic operations when normal respiratory mechanism is interfered with, double intubation enables one not only to maintain respiratory exchange but to regulate the collapse of the lung, and so save the patient much shock.

Blood Sugar Curves in Normal and Diabetic Persons.—The changes in blood sugar concentration which occur in youth, old age, diabetes and obesity after the ingestion of a fixed quantity of cane sugar are discussed by Shapland. Likewise, the daily variations of the blood sugar seen in normal and diabetic persons on weighed diets are described and illustrated. Cane sugar, or sucrose, when ingested on an empty stomach by a healthy young subject, produces in suitable quantities a definite blood sugar curve which is similar to that given by glucose when taken in similar amounts under the same conditions. Cane sugar in the diabetic subject under these conditions produces, like dextrose, a blood sugar curve which differs materially from that seen in health. Both in advanced years and in obesity of long standing, the blood sugar curve tends to approach the diabetic type; in early cases of obesity, however, the carbohydrate tolerance is sometimes increased. In diabetes—especially the more severe cases—the renal threshold for sugar tends to become raised. The blood sugar variations during the day on an ordinary diet may in health amount to as much as 0.078 per cent of sugar. The main elevations in blood sugar concentration are seen after the meals containing the bulk of the carbohydrate of the diet, but a secondary elevation tends to occur toward the late afternoon, a rise that may be associated with the slow production of sugar derived from protein metabolism. The variations in blood sugar concentration seen normally in health during the day occur also in diabetes, but in an exaggerated form. These excessive elevations of blood sugar concentration can be controlled by insulin injected at a suitable interval of time—about thirty minutes—before the chief meals of the day.

Testing Kidney Capacity for Concentrating Chlorides.—A simple method is suggested by de Wesselow for testing the capacity of the kidney for concentrating chlorides. The capacity of the kidney for chloride concentration appears to run parallel with its power of concentrating urea, both functions being affected in disease to an approximately similar degree. An apparent dissociation of the two functions is seen in cases of parenchymatous nephritis with gross anasarca, but it would seem that this is merely the result of impoverishment of the blood in chloride.

Postoperative Fatal Tetanus.—A fatal case of tetanus following a cesarean section is described by Dyke. The catgut used in suturing the uterus is implicated as the source of the

infection. The diagnosis was rendered difficult by the ill marked and mild nature of the symptoms, and the fact that the patient was known to harbor a fear of tetanus.

Fulminant Acute Poliomyelitis.—Collinson describes a case of acute illness fatal in sixty-two hours. There was an onset with vomiting, and general toxic symptoms, restlessness, malaise, delirium, and after an interval of about forty hours, the localizing symptoms appeared limited to dysphagia, suggesting serious injury to some part of the lower medullary region. At the same time, there was evidence of general infection from the temperature and pulse. There was no history of any injury, no drugs of any kind had been taken, and the differential diagnosis seems to lie between two infections, each of neurotropic type, acute poliomyelitis and epidemic encephalitis. In favor of acute poliomyelitis is the age of the patient, 11 years, the onset with vague febrile symptoms a few hours before the appearance of local paralysis, the extreme severity of this latter, and its limited extent.

Suppression of Urine for Three Days.—Lankester's patient, thirty-four weeks pregnant, had been under treatment for albuminuria. There was a steady trickle of blood from the vagina, and the edge of the placenta was felt through the cervix. A diagnosis of placenta praevia was made. She was given an anesthetic, the membranes were ruptured, and the vagina was firmly packed with gauze. No urine had been voided since admission to the hospital. A catheter was passed, and the bladder was found to be empty. Her condition was so bad that any radical treatment was contraindicated. Lankester resorted to the administration of intravenous salines, pilocarpine, one-sixth grain (11 mg.), subcutaneously, and ergotin, 1 cc., intramuscularly, oxygen and camphor, 3 grains (0.2 Gm.), in oil with strychnine and digitalin hypodermically. Finally, she was given a steam vapor bath and the pilocarpine, one-third grain (22 mg.), was repeated. After two hours, the skin was definitely acting and perspiration became visible. Her general condition was slightly improved, and she appeared to be having definite uterine contractions. The plugging was removed from the vagina, and a quarter of an hour later she delivered herself of a stillborn fetus. The placenta and membranes rapidly followed, together with some retroplacental blood clot. She was sweating profusely, and consciousness was returning. No urine had been passed. In the evening of the third day a catheter was passed, and 7 ounces (200 cc.) of urine drawn off. This contained a large amount of albumin and many casts, blood cells and pus. On the next day 13 ounces (385 cc.) was passed naturally, and on the next day 65 ounces (1,920 cc.). The patient made an uninterrupted recovery, and was discharged feeling quite well, with the urine free from albumin.

Adenoma of Jejunum Causes Intussusception.—The tumor in Maunsell's case was about the size of a golf ball, sessile, and situated about 8 inches (20 cm.) from the duodenojejunal flexure. About 3 inches (7.6 cm.) of the intestine was resected, and continuity reestablished by end-to-end anastomosis. No other tumor was felt in the abdomen.

Medical Journal of Australia, Sydney

2: 267-300 (Aug. 28) 1926

*Cardiac Rheumatism in Childhood. M. J. Plomley.—p. 267.
*Economic Aspect of Rheumatic Heart Disease in Adult. C. G. McDonald.—p. 269.
*Heart Disease in Children of School Age. H. Sutton.—p. 272.
Surgery and Surgical Anatomy of Tonsil of Fauces. R. Hennessy.—p. 274.
Gallbladder and Allied Infections. H. S. Stacy.—p. 277.
Case of Malaria Acquired in Sydney. R. A. Money.—p. 283.
Two Cases of Acute Diffuse Osteomyelitis of Superior Maxilla. G. Halloran.—p. 284.
*Neuromuscular Incoordination of Alimentary Canal in Infants. P. L. Hipsley.—p. 284.

2: 301-330 (Sept. 4) 1926

Hydatid Disease in Domestic Herbivora (Echinococcus Multilocularis); Relationship with Echinococcus Alveolaris. H. R. Dew.—p. 301.
Food Deficiencies in New Guinea. R. W. Cilento.—p. 309.
Surgery of Frontal Sinus. T. S. Kirkland.—p. 313.
Experiences in Treatment of Voluntary Patients at Psychiatric Clinic, Broughton Hall. S. E. Jones.—p. 316.

Cardiac Rheumatism in Childhood.—During a three year period there were admitted to the Royal Alexandra Hospital for Children at Camperdown 195 children with acute rheumatism, forty-seven with cardiac disease. In addition, eighty-eight children with chronic rheumatic endocarditis were admitted and readmitted, some as often as four times in twelve months, with thirty-one deaths. In New South Wales during the five years 1920-1925, the total number of deaths from acute rheumatism was, for all ages, 406. Of these, 190 occurred in the from 5 to 15 year period; that is, almost 47 per cent. These figures, Plomley says, show that rheumatism and rheumatic cardiac diseases are most important causes of death, and the disease usually begins in the school age period.

Economic Aspect of Rheumatic Heart Disease.—The solution of the problem of employment of the cardiac patient, McDonald thinks, lies in the readjustment of the relationship of worker and employer. Fear of the Workers' Compensation Act guides the attitude of the employer, and he cannot be blamed if he refuses to employ a man who may within a short time become a heavy burden on industry. Amendment of legislation is needed which would permit an employer to pay to the partially unfit an amount less than the basic wage in proportion to the effort of which the worker is capable, and which would safeguard him from claims of compensation for a disability from which the worker suffered prior to employment.

Heart Disease in School Children.—Among a large number of school children with heart disease on whom Sutton makes a report, 41 per cent had a tonsillar defect. On the basis of these figures, a tonsillectomy appears a rational prophylactic measure which should be carried out whenever an unhealthy tonsil is found in a child with a rheumatic history.

Neuromuscular Incoordination of Alimentary Canal.—Hipsley reports two cases which were of the nature of a neuromuscular incoordination. In one case, the lower end of the esophagus was the seat of the lesion; in the other, the colon at the pelvirectal junction was affected. There was no mechanical obstruction in either case.

Medical Journal of South Africa, Johannesburg

22: 1-28 (Aug.) 1926

Anatomy of Heart. M. R. Drennan.—p. 3.
Pyloric Abnormalities in Infants. D. D. Dunn.—p. 5.
Mental Deficiency and Scout Movement. M. J. Cohen.—p. 8.

South African Medical Record, Cape Town

24: 377-396 (Sept. 11) 1926

Diseases of Periodontal Tissues Due to Infection in Their Relation to Toxemia. K. G. Kemp.—p. 379.
Rosenbach's Erysipeloid. F. Krone.—p. 382.
Diseases of Sweat Glands. N. Finn.—p. 384.
*Scurvy: Treatment with Raw Orange Juice Intravenously. H. A. Spencer.—p. 386.

Raw Orange Juice in Scurvy.—In a case of scurvy resistant to lime juice, Spencer gave two intravenous injections of raw orange juice, 10 cc. of juice in 150 cc. of physiologic sodium chloride solution, at intervals of a week, a fresh orange being used for each injection. No ill effects of any kind accompanied or followed the injections. There is no doubt in Spencer's mind that the injection of raw orange juice alone caused steady improvement and the disappearance of all scurvy symptoms, and that it saved the man's life.

Tohoku Journal of Experimental Medicine, Sendai, Japan

7: 411-601 (Sept. 10) 1926

Influence of Protection Against Fall of Body Temperature on Ether Hyperglycemia and Glycosuria in Dog. H. Tachi, K. Takai and I. Fujii.—p. 411.
Internal Secretion of Pancreas: IV. Pancreas Hormone in Blood Under Various Conditions. T. Hoshi.—p. 422.
Id.: V. T. Hoshi.—p. 446.
Effect of Vegetative Nerve Poisons and Some Other Drugs on Uric Acid Concentration of Blood. K. Tashiro.—p. 482.
Effects of Afferent Stimulation of Vagus on Some Vegetative Organs. K. Tashiro.—p. 509.
Resorption of Glucose into Portal Vein. Y. Sataké and I. Fujii.—p. 522.
Resorption of Levulose into Portal Vein. Y. Sataké and S. Hirayama.—p. 535.
Investigation of Proteus Bacillus. S. Matsui.—p. 544.
Colorimetric Method for Determination of Inorganic Sulphates, Inorganic Phosphates and Chlorides in Small Amounts of Blood. S. Yoshimatsu.—p. 553.
Serum Protease: X. Multiplicity of Serum Protease, Differentiation and Characterization of Various Serum Proteases. S. Kimura.—p. 560.

Annales de Derm. et Syphiligraphie, Paris

7: 384-464 (July) 1926

Syphilitic Erythromelia. C. Audry.—p. 384.
Dyshidrosis from Salicylic Acid. L. Lortat-Jacob et al.—p. 391.
Iconography of Staphylococcus Pustules. R. Sabouraud.—p. 403.
Localized Dystrophies from Congenital Syphilis. C. du Bois.—p. 415.
Dermographism. B. Dujardin and N. Decamps.—p. 426.

7: 465-528 (Aug.-Sept.) 1926

Etiology of Erythematous Lupus. A. Civatte.—p. 465.
*Hemotherapy of Furunculosis. P. Ravaut and R. Huguenin.—p. 486.
Cancer Developing in a Lupus Scar. X. Vilanova.—p. 493.
Method of Detecting Treponemes. M. Kitchevatz.—p. 501.
Pityriasic Erythrodermia of Tuberculous Origin. P. A. Pavloff and K. S. Gavriloff.—p. 504.

Efficacy of Heterohemotherapy in Rebellious Furunculosis.—Ravaut and Huguenin describe a case of recurring furunculosis in a woman, aged 22. The lesion first appeared nine years ago. When the patient was seen by them, she had been suffering for over a year from a succession of furuncles, the appearance of each coinciding with the menses. Staphylococcus autovaccine was without influence. Thereupon autohemotherapy was tried. First 5, then 10, 15 and 20 cc. of blood was injected, the injections being given every other day. They did not provoke any reaction, and were followed by only partial improvement. Then an attempt was made to use blood from another person, the blood belonging to a different group. Three injections of, respectively, 5, 10 and 15 cc. of blood were given within ten days. Two of the injections induced shock. The furuncles vanished but reappeared after two months. Then three series of similar injections were given ten days apart. A complete cure resulted and there has been no recurrence to date (one year).

Annales de Médecine, Paris

20: 81-160 (Aug.) 1926

Pathologic Anatomy of Progressive Syphilitic Paraplegia. C. Foix et al.—p. 81.
*Action of Insulin on Deoxidative Carbonuria. O. Kauffmann-Cosla and J. Roche.—p. 128.
The Aorta in Malaria. E. Benhamou.—p. 145.

Action of Insulin on Oxidative Function of Cells.—Increased elimination by the urine of incompletely oxidized carbon compounds, which is designated "deoxidative carbonuria" by Kauffmann-Cosla and Roche, is noted constantly in diabetes, tuberculosis and cancer; it may occur also in anemia and various infectious or toxic diseases. Research was made on total defibrinated blood to which insulin was added in vitro. Under the influence of the insulin, the disappearance of glucose was hastened and the production of carbon dioxide increased. In similar experiments with washed blood corpuscles the influence of insulin on glucose was the same, but there was no effect on oxidation. Evidently a still undetermined element of the serum is indispensable for the action of insulin on oxidation. There appeared the possibility of decreasing the production of carbon dioxide in the blood without affecting the disappearance of the glucose. A condition was created analogous to that in deoxidative carbonuria by suppressing the entrance of oxygen into the blood from the outside, also by reducing the amount of the blood ferments and by increasing that of glucose. The influence of insulin on the disappearance of glucose proved to be more pronounced in blood with high sugar content than in that with normal sugar content. Insulin is the specific remedy for deoxidative carbonuria, when there is sufficient phosphorus and calcium in the organism.

Archives de l'Institut Pasteur de Tunis

15: 197-287, 1926

Transmission of Recurrent Fever by Ornithodorus and Louse. C. Nicolle and C. Anderson.—p. 197.
*Experimental Research on Scarlet Fever. C. Nicolle et al.—p. 229.
Granular Conjunctivitis in Animals. C. Nicolle and U. Lumbroso.—p. 240.
Experimental Typhus in Muridae. C. Nicolle.—p. 267.
Animals Refractory to Typhus. C. Nicolle.—p. 276.
Ionic Acidity of Mineral Waters in Tunis. P. Durand and L. Gaillon.—p. 279.
Antiseptic Property of the Mineral Waters of Korbous. P. Durand and L. Gaillon.—p. 281.
New Intestinal Parasite of Man in Tunis. A. Espié.—p. 283.

Experimental Research on Scarlet Fever.—Nicolle, Conseil and Durand's experiments were conducted on healthy volunteers. One, inoculated in the tonsil with virus from the tonsil of a scarlet fever patient, developed a sore throat but not rash. In the tonsil of another, with a positive Dick reaction, was placed a drop of culture (fourth passage) of streptococcus isolated from the same patient. After a six day incubation period, the typical signs of scarlet fever appeared. The third volunteer, also with a positive skin reaction, was injected subcutaneously with 0.5 cc. of the same patient's unfiltered urine. He presented two attacks (a day apart) of a scarlatiniform erythema lasting for a few hours. Injections of the same urine, but filtered, elicited a positive Dick reaction in two persons, proved later to be sensitive to scarlet fever toxin. The streptococcus which caused the experimental scarlet fever possessed hemolytic and toxic properties; it did not ferment mannitol. The results of the experiments are declared to be a confirmation that the streptococcus is the causative factor in scarlet fever.

Archives des Maladies du Coeur, etc., Paris

19: 505-576 (Aug.) 1926

Inflammation of the Coronary Artery and Subendocardiac Infarction. R. Lutembacher.—p. 505.
*Action of Epinephrine on the Vagus. M. Petzetakis.—p. 513.
Inflammation of Coronary Artery and the Arteries of the Pancreas. R. Lutembacher.—p. 522.
Auriculoventricular Block in Pneumonia. E. Frommel and A. Thévenod.—p. 528.

Influence of Epinephrine on Heart and Vessels Owing to Its Action on the Vagus.—Petzetakis' research was made on numerous persons, aged from 20 to 35, with normal heart and vessels. Epinephrine given in doses of 0.25, 0.5 and 1 mg. induced a short phase of sympathetic hyperexcitability succeeded by a longer phase of vagal hyperexcitability. It caused pauses between heart beats, retardation of the rhythm and disorder in auriculoventricular conduction. This effect of epinephrine could be suppressed by previous administration of atropine. Large doses of epinephrine induced brief arterial hypertension followed by prolonged hypotension. The second and more dangerous phase can be prevented if no more than 0.25 mg. is given in the first intracardiac injection. The drug is administered in a warm isotonic sodium chloride solution. The injection may be repeated a few minutes later, increasing the dose, if necessary, up to 0.5 mg. Especial caution is necessary in giving epinephrine in syncope from chloroform anesthesia and in the Adams-Stokes syndrome.

19: 577-640 (Sept.) 1926

Renal Hyperfunction in Compensated Heart Diseases. G. Étienne et al.—p. 577.
Compression of Eyeballs and Auricular Flutter. A. Clerc and M. Bascourret.—p. 589.
Arterial Tension in Upper and Lower Limbs. A. Luisada.—p. 598.
*Mode of Action of Nitrites. J. Meyer.—p. 615.

Mechanism of Action of Nitroglycerin.—Following administration of from 4 to 8 drops of nitroglycerin, Meyer observed reduction in oxygen metabolism in two healthy persons and in four of five with various diseases. The ventilation of the lungs diminished correspondingly. The decrease was most pronounced from the third to the sixth minute after the intake of the nitroglycerin. Besides its effect on the vasomotor function, nitroglycerin seems to cause general depression; it tends toward conservation of energy in the organism, effecting secondarily the reduction of pulmonary ventilation and the activity of the heart. In this way he explains the shock in an elderly woman with angina pectoris, occurring two minutes after a single dose of about 10 drops of a 1 per cent solution of nitroglycerin.

Archives Franco-Belges de Chirurgie, Brussels

29: 181-272 (March) 1926

Roentgenographic Exploration of the Abscess in Pott's Disease. R. Massart and R. Ducroquet.—p. 181.
Treatment of Paraplegias in Pott's Disease According to Their Anatomicoclinical Forms. E. Sorrel and Sorrel-Dejerine.—p. 202.
*Catheterization of Spinal Abscess for Pott's Paraplegia. Calvé.—p. 218.
Bone Grafting in Pott's Disease. J. Creyssel.—p. 246.

Procedure for Catheterization of Abscess in Pott's Disease.—Calvé gives a detailed description of his technic to create an outlet for the abscess located in front of and compressing the spinal cord in Pott's disease. A canaliculated sound, appropriately curved, is introduced into the anterior extradural space through the intervertebral foramen, effecting a kind of catheterization. Pus appears in the sound immediately after puncture, aspiration being usually unnecessary. Of eighteen patients with grave paraplegia from Pott's disease, treated by this method, ten remained under observation for months or years after the intervention. Seven of these appear to be cured; previous orthopedic treatment, continued for months, had been without avail. This method of puncture, performed sixty-six times, never provoked an immediate or remote by-effect, except girdle pains in one instance.

Archives des Maladies de l'App. Digestif, etc., Paris

16: 753-864 (July) 1926

Gastric and Duodenal Ulcer. A. F. Hurst.—p. 753.
Cancer of Pancreas with Embolus in Wirsung's Canal. Carnot and Libert.—p. 780.
Chronic Septic Hepatitis. J. Hatzieganu.—p. 787.
Innervation of the Stomach. L. Binet and E. Dauptain.—p. 803.

Archives d'Ophthalmologie, Paris

43: 385-448 (July) 1926. Partial Index

Latent Tumors of the Eyeball. F. Terrien.—p. 385.
*Early Signs of Tumor of the Choroid. M. Teulières.—p. 393.
Congenital Pigmented Retinitis. Y. Shoji.—p. 402.
Glaucoma After Operation on Cataract. Fage.—p. 408.
Operation for Detachment of Retina. P. Jeandelize and R. Baudot.—p. 413.
Diameter of Objects in Binocular Vision. H. Polliot.—p. 415.

43: 449-512 (Aug.) 1926. Partial Index

Cavernous Angioma of the Orbit. H. Truc and C. Dejean.—p. 449.
Biologic and Microscopic Research on Keratitis. C. Pascheff.—p. 469.

Early Symptoms of Tumor of the Choroid.—Among the early symptoms of sarcoma of the choroid as observed in four cases, Teulières specifies a progressive hypermetropia. This was associated with a reduced visual acuity, while the fixation point remained unchanged. This hypermetropia points to a gradual detachment of the retina which continues to function while it is supported by the tumor or is still partly in contact with the choroid. In a fifth patient, there was a myopic astigmatism. It is possible that sarcoma of the choroid, located in front of the equator of the eye, may cause a slight propulsion of the antero-external part of the uveal tract. This entails a localized relaxation of Zinn's zonule and consequently an increase in horizontal convexity of the lens.

Journal de Médecine de Bordeaux et du Sud-Ouest

103: 557-600 (July 10) 1926. Partial Index

*Measles Vaccination in 1758. Petges and Gadaud.—p. 573.

Inoculation of Measles in the Eighteenth Century.—Petges and Gadaud trace the first attempt at preventive inoculation of measles to Herne in 1758. This was done on an infant, aged 7 months. The skin of a patient with measles had been incised where the eruption was most pronounced, and a piece of cotton soaked in the blood. Two incisions, as for vaccination for smallpox, but deeper, were made in the infant's skin and allowed to bleed for fifteen minutes. Then the blood-soaked cotton was applied and kept there for three days. The child become ill by the sixth day; the eruption appeared two days later, and lasted five days. Recovery was perfect. The efficacy of measles inoculation was later vigorously denied.

Paris Médical

61: 217-232 (Sept. 18) 1926

Venesection with Restoration of Erythrocytes. A. Gilbert et al.—p. 217.
Injections of Cerebrospinal Fluid in Typhus. C. Zielinski.—p. 225.
Diathermy for Exophthalmic Goiter Syndrome and Paroxysmal Tachycardia. E. Savini and S. Ackerman.—p. 227.

61: 233-244 (Sept. 25) 1926

Treatment of Acute Gonorrheal Arthritis. E. Bressot.—p. 233.
*Blood Viscosity in Tuberculosis. Dumitresco-Mante and G. Alexandresco.—p. 238.
Disturbances from Endocrine Glands and from Hypersympathicotonia. L. Lebée.—p. 240.
Case of Nephrotyphoid. P. Carnot et al.—p. 243.

The Viscosity of Blood in Pulmonary Tuberculosis.—Dumitresco-Mante and Alexandresco found a low viscosity of the total blood in fifteen of twenty-two patients with pulmonary tuberculosis. This accords with the fact that the viscosity of the blood normally parallels the number of red blood corpuscles, which is usually reduced in tuberculosis. No connection could be established between the viscosity and the number of leukocytes, the amount of hemoglobin or of protein in the blood, or the refractometric index. The coefficient indicating the ratio between the arterial pressure and the viscosity of the blood was mostly below the normal.

Presse Médicale, Paris

34: 1217-1232 (Sept. 29) 1926

Roentgen-Ray Shadow "en Casque" in Lung Diseases of Infancy. G. Mouriquand et al.—p. 1217.
Congenital Callous Gastritis. P. Rudaux and G. Durante.—p. 1219.
Mechanism of Adams-Stokes Syndrome. E. Géraudel.—p. 1220.
*Orthostatic Supramalleolar Cyanosis. G. Delater and R. Hugel.—p. 1222.

Orthostatic Supramalleolar Cyanosis from Venous Insufficiency.—Delater and Hugel reiterate that the function of the muscular tunic of the vein is not simply the production of tonic contractions for maintaining the caliber of the vessel. It includes also active contractions for promoting the sending of the blood back to the heart. Insufficient function induces stasis and dilatation, observed even in minute venules. The skin becomes cyanotic and cold. Venous stasis may be paroxysmal as, for instance, in the ears or nose or in a limb, disappearing in the latter case when the limb is raised. Obviously venous stasis is liable to develop most frequently in the region of the leg not exposed to pressure of the shoe. With the present style of low shoe, the venous cyanosis develops above the malleoli, creating the so-called orthostatic supramalleolar cyanosis. A progressive insufficiency of the venous musculature usually coincides with a disturbed balance of the endocrine glands and vegetative system. It should be distinguished from cyanosis brought about by dilatation of arterioles. This cyanosis, with a warm red skin, does not disappear on raising the foot.

34: 1233-1248 (Oct. 2) 1926

*Postoperative Acidosis. M. Labbé and M. Chevki.—p. 1233.
Treatment of Puerperal Infection. M. Metzger and J. L. Marmasse.—p. 1235.

Postoperative Acidosis.—Labbé and Chevki examined the blood and urine of seventeen patients during the first three days following the day of operation, in most cases laparotomy, done under chloroform or ether. In nine cases a slight acetonuria appeared after one day; it lasted for two days in three, for three days in one. Diaceturia was noted after forty-eight hours in two, after seventy-two hours in one. The amount of organic acids in the urine was considerably increased, being sometimes twice that present before operation. The alkali reserve of the blood was reduced on the second day in the four patients tested. Sometimes it remained low for two or three days. On the other hand, the hydrogen ion concentration became normal or even lower twenty-four hours after the operation. They suggest that disturbance of metabolism consisting in incomplete oxidation of the nonketone organic acids may be a cause of postoperative acidosis, as also derangement of nutrition induced by the anesthetic, in which functional insufficiency of the liver plays a large part.

Revue Franç. de Gynécologie et d'Obstét., Paris

19: 333-396 (June) 1926

Solenoma, Cystic Fibroma of the Abdomen in Women. F. Jayle.—p. 333.

19: 397-444 (July) 1926

Chorio-Epithelioma of Uterus Secondary to Abortion. F. Patti.—p. 397.
Adnexitis and Vaccine Therapy. P. Daléas.—p. 406.
Ultraviolet Rays in Treatment of Menstrual Disturbances. H. Macrez.—p. 414.

Schweizerische medizinische Wochenschrift, Basel

56: 801-824 (Aug. 21) 1926

*Neo-Unitarism in Smallpox. Tièche.—p. 801.
Action of Insulin in Coma. W. Singer.—p. 808.
Effects of Coffee. J. Menach.—p. 811.
Blood After Roentgen Irradiation. A. Gigon and M. Lüdin.—p. 814.
Thiersch Grafts. R. Hoffmann.—p. 816.

Neo-Unitarism in Smallpox.—Tièche most decidedly rejects Sahli's neo-unitary opinions on smallpox and chickenpox. He affirms that it is always possible to make the correct diagnosis and found in one epidemic, claimed to be a proof of the unitary hypothesis, that it consisted exclusively of cases of chickenpox.

56: 825-848 (Aug. 28) 1926

Treatment of Nervous Diseases. O. Veraguth.—p. 825.
Quack Devices for Deafness. E. Schlittler.—p. 829.
*Garage Accidents. J. Dettling.—p. 832.
Appendicitis in the Orient. J. Fallscher-Zürcher.—p. 840.

Garage Accidents.—Dettling points out that the exhaust gas contains 2, 8 or 14 per cent of carbon monoxide. Nobody would stay in a room with an open gas jet, although illuminating gas contains about the same percentage (5 to 12 per cent) of the substance. He reports a case of garage poisoning where the circumstances (unusual closing of inner door) led to suspicion of intended suicide.

Policlinico, Rome

33: 1145-1176 (Aug. 16) 1926

Treatment of Rickets. L. Sabatini.—p. 1145.
Fistula of the Neck of Dental Origin. A. Brusotti.—p. 1152.
Injuries and Tuberculosis. E. Fossataro.—p. 1155.
*Dangers of the Automobile. A. Filippini.—p. 1157.

Dangers of the Automobile.—Filippini points out that in the United States more people die from automobile accidents than from typhoid. The automobile mortality in the United States about equals that from diphtheria in Italy. Motoring may provoke attacks of renal or gallbladder colic and may also cause oliguria and uremia in patients with diseased kidneys. The carbon monoxide of the exhaust gas may kill the rider if it escapes into a closed car. It is especially dangerous in an insufficiently ventilated garage. He regards the conclusions of the American Commission on tetraethyl lead as too optimistic. It is premature to form conclusions —especially on the danger to the general population—from the masses of lead strewn upon the roads. The only thing which is certain is that the poisoning is not as dramatic in the automobile industry as it was in the manufacture of tetraethyl lead. He approves of the prohibition of ethyl gasoline in Italy, until a long experience elsewhere shows whether it is innocuous or at least not very dangerous.

33: 1209-1239 (Aug. 30) 1926

Treatment of Auricular Fibrillation. G. Meldolesi.—p. 1209.
Incarcerated Femoral Hernia. P. Baricci.—p. 1215.
*Kirmisson's Hook. A. Avoni.—p. 1216.
Surgery of Common Bile Duct. S. Latteri.—p. 1217.

Kirmisson's Hook.—Avoni extols the advantages of Kirmisson's hook for removal of coins and similar foreign bodies from the upper part of the esophagus (level of the bifurcation of the trachea).

Riforma Medica, Naples

42: 817-840 (Aug. 30) 1926

Diagnosis and Treatment of Tuberculosis. E. Maragliano.—p. 817.
*Transverse Diameter of the Heart. M. Manara.—p. 821.
Death from Arsphenamine. G. Lionti.—p. 823.
Treatment of Urethral Structure. G. della Seta.—p. 836.

Transverse Diameter of the Heart.—Manara compared the transverse diameter of the thorax with that of the heart orthodiagraphically. With healthy hearts and an average body height the ratio oscillates around 2; with a short thorax, it may be as low as 1.5; in tall slender subjects it may surpass 2.5.

Prensa Médica Argentina, Buenos Aires

13: 193-220 (July 30) 1926

Metatarsalgia. N. Tagliavacche.—p. 193.
*Sympathectomy for Spastic Paralysis. J. Diez.—p. 196.
*Roentgen-Ray Treatment of Asthma. M. Miranda Gallino.—p. 204.
Epinephrine Treatment of Intolerance for Quinine. V. Arroyabe and R. Alvarado.—p. 208.
Typhoid Fever. L. Goldemberg.—p. 209.

Sympathectomy in Treatment of Muscular Contracture and Paralysis.—Diez has resected the lumbosacral sympathetic in thirty-eight cases of muscular hypertonia, and has never observed any visceral disturbances therefrom. The operation was bilateral in certain patients, and some have been under observation for two years. No anatomic or functional disturbances followed. He discusses the advantages over Royle's ramisection, and describes a case of tuberculous pachymeningitis with paraplegia of twenty-six months' standing, in which the patient was able to move his legs the eighth day after the operation.

Roentgen-Ray Treatment of Asthma.—Miranda Gallino applied the roentgen rays to the spleen in twenty-six cases of asthma of several years' standing. A complete and permanent cure was realized in 46 per cent, and great improvement followed in 38 per cent. The intervals since have been up to thirty months. In thirty more recent cases the results have been equally favorable. In the cases of failure, the asthma was probably secondary to toxic, infectious or mechanical causes.

Semana Médica, Buenos Aires

2: 245-312 (July 29) 1926

*Transillumination of the Larynx. L. Samengo.—p. 245.
*Lymphogranulomatosis in Children. M. Acuña and A. Casaubón.—p. 248.
Congenital Cysts in Tonsils. H. Zubizarreta.—p. 264.
Mechanical Jaundice. A. Navarro.—p. 269.
Acute Intestinal Occlusion. M. Ruiz Moreno.—p. 274.
Social Insurance in the Fight Against Tuberculosis. G. Bosco.—p. 289.
Hematuria During Pregnancy. J. Bazán.—p. 291.

Transillumination of the Larynx.—Samengo describes with illustrations his simple apparatus. He claims that the differential diagnosis of cancer in the region is possible with it. When applied to the cricoid cartilage, the trachea can be inspected down to the bifurcation.

Lymphogranulomatosis in Children.—Acuña and Casaubón have encountered six cases in the last six years. The children survived for twenty months on an average, but one boy, aged 12, lived for six years.

Vida Nueva, Havana

18: 167-190 (July) 1926

*Differential Diagnosis of Typhoid. F. Hurtado and A. Castellanos.—p. 167.
Treatment of Fracture of Femoral Neck. P. Sanchez Toledo.—p. 174.
Emergency Pneumothorax in Treatment of Hemoptysis. L. Romaguera.—p. 176.
Excessive Vomiting in Pregnancy. F. M. Zamora Caballero.—p. 180.
Case of Fracture of the Urethra. T. Causa and R. Gonzalez.—p. 186.

Diagnosis of Typhoid.—Hurtado and Castellanos state that all the various usual tests were negative in a case of typhoid in a girl aged 8. The symptoms suggested typhoid or septicemia from a focus of acute osteomyelitis. The diagnosis was cleared up by the discovery of typhoid bacilli in the B bile obtained with the duodenal tube.

Archiv für exp. Pathologie und Pharmak., Leipzig

116: 1-116 (Aug.) 1926. Partial Index

*Saponin and Absorption of Dextrose. F. Lasch and S. Brügel.—p. 7.
*Insulin Content of Pancreas in Diabetics. L. Pollak.—p. 15.
*Saponin and Absorption of Curare. L. Kofler and R. Fischer.—p. 35.
Effect of Quinine on Metabolism. B. Rosenthal and W. Lipschitz.—p. 39.
*Ethyl Alcohol and Electrolyte Sensitiveness of Proteins. P. Wels.—p. 67.

Influence of Saponin on Absorption of Dextrose.—Lasch and Brügel found in experiments on rabbits, dogs and human subjects, that saponin increased the absorption by the intestinal mucous membranes of dextrose given by the mouth. An increase in the blood sugar was also noted.

Insulin Content of Pancreas in Diabetics.—Pollak extracted the insulin according to two different methods from the diabetic pancreas in nine cases, and from the normal pancreas in five cases. By using the insulin thus obtained in carefully controlled animal experiments he found that the diabetic pancreas contained only about one-half the amount of insulin contained by the normal organ. He was not able to establish a connection between the gravity of the diabetes and the insulin content of the pancreas.

Action of Saponin on the Absorption of Curare.—Kofler and Fischer noted that saponin favored the absorption of curare by the frog's digestive tract.

The Effect of Ethyl Alcohol on Electrolyte Sensitiveness of Proteins.—Wels previously demonstrated that addition of electrolytes, which reduce the solubility of proteins, causes an

increase of the amount of ultramicrons of the protein in solution. This increase in the amount of ultramicrons was called electrolyte sensitiveness of the protein. He found that an ethyl alcohol content of 0.5 per cent decreased the electrolyte sensitiveness, a content of 0.25 per cent increased it. Similar concentrations are found in the blood of the human subject after intake of alcohol. There might be a parallel between the increase of the electrolyte sensitiveness and the excitation stage caused by low alcohol concentrations in the blood, and between the decreases of the sensitiveness and the stage of narcosis caused by higher concentrations.

Biochemische Zeitschrift, Berlin

175: 253-498 (Aug. 30) 1926. Partial Index

*Distribution of Dextrose in the Blood. Rona and Sperling.—p. 253.
Polarographic Methods in Biology. S. Prát.—p. 268.
*Phosphate in Carbohydrate Metabolism. I. Abelin.—p. 274.
Quantitative Determination of Lipoids in Protein. Theorell.—p. 297.
*Metabolism and the Urinary Ratio C:N. T. Kanamori.—p. 318.
Phenylhydrazine Anemia and the Urinary Ratio C:N. Kanamori.—p. 330.
Quantitative Determination of Fat. N. D. Zelinsky and S. R. Zinzadze. —p. 335.
Determination of Lactic Acid in Small Amounts of Blood. T. Brehme and B. Brahdy.—p. 348.
β-Oxybutyric Acid in Muscles and Liver. J. Snapper and A. Grünbaum. —p. 357 and 366.
Colorimetric Microdetermination of Carbohydrates. Z. Dische and H. Popper.—p. 371.
*Glycolysis in Carcinoma. Z. Dische and D. Laszlo.—p. 412.
Determination of Fatty Acids. A. Fischer.—p. 449.
Microdetermination of Iodine. B. Grosák.—p. 455.
Autoproteolysis. O. Steppuhn et al.—p. 471.
Formation of Urease by Bacteria. L. Rubentschik.—p. 482.
Effect of Insulin on Blood Sugar in Vitro. E. Müller.—p. 491.

Distribution of Dextrose in Plasma and Blood Corpuscles.—Rona and Sperling found that in alimentary hyperglycemia without insulin, the amount of sugar bound by corpuscles in the blood was always lower than the plasma sugar, while during the action of insulin the sugar bound by the corpuscles reached values higher than those of the plasma sugar.

The Importance of Phosphate for Carbohydrate Metabolism.—Abelin found in experiments on rats that carbohydrate metabolism depends not only upon carbohydrates or substances able to form carbohydrates, as proteins and perhaps fat, but also essentially upon the electrolytes. Carbohydrates or proteins given in combination with sodium phosphates caused a lower respiratory quotient and production of carbon dioxide than when given without phosphate. They inhibited the formation of glycogen in the liver, but not regularly in the muscles. When given with levulose, the phosphates did not disturb the formation of glycogen in the liver.

Influences of Nourishment with High Vitamin and Low Mineral Content on the Metabolism and the Urinary Ratio C: N.—Kanamori found in experiments on two dogs that diet with low mineral salt content caused considerable decrease in weight. The urinary ratio C: N remained normal.

Glycolytic Power of Animal Organs in Carcinoma.—Dische and Laszlo induced carcinoma in mice by intramuscular inoculation of a suspension of carcinomatous tissue, and found that the noncancerous liver of cancerous animals showed a higher glycolysis than did that of the normal animal.

Deutsche Medizinische Wochenschrift, Berlin

52: 1455-1494 (Aug. 27) 1926

Chemotherapy of Malaria. J. Morgenroth et al.—p. 1455.
Chronic Arthritis. H. Strauss.—p. 1457. C'cn.
*Syphilitic Blood Changes. F. Klopstock.—p. 1460.
*Transfusion Technic in Pernicious Anemia. F. Walinski.—p. 1462.
*Protein Therapy. E. Herzfeld et al.—p. 1464.
*Pathogenesis of Vaquez's Disease. I. Zadek.—p. 1466.
*Toxicity of Calcium and Diet. L. Koopmann.—p. 1467.
Protection Against Light. R. L. Mayer.—p. 1469.
*Vaccination Against Scarlet Fever. E. Strössner.—p. 1470.
Contractures of Eye Muscles. T. Cohn and Isakowitz.—p. 1473.
Dosage in Deep Roentgen-Ray Treatment of Pulmonary Tuberculosis. H. Schulte-Tigges.—p. 1475.
*Roentgen-Ray Treatment of Melena. Irle and Schoeneck.—p. 1478.
Coxitis from Roller Skating. A. Orgler.—p. 1478.
Treatment in Health Resorts. Bauke.—p. 1478.
Relationship Between Man and Apes. J. Schwalbe et al.—p. 1479.

Syphilitic Blood Changes.—Klopstock concludes from his experiments that the Wassermann test is based on a true immune reaction. Extracts from *Spirochaeta pallida* seem to be superior to other antigens. Injection of killed spirochetes induced in rabbits a rapid and abundant formation of antibodies against them as well as against lipoids of organs. Such serums fixed the complement in much higher dilutions than serums from syphilitic patients and also agglutinated spirochetes.

Transfusion Technic in Pernicious Anemia.—Walinski injects 5 to 10 units of insulin twice daily in pernicious anemia patients. He found this a valuable addition to blood transfusions.

Protein Therapy.—Herzfeld, Mayer-Umhöfer and Becker tested the influence of diphtheria antitoxin and of normal horse serum on guinea-pigs injected with diphtheria toxin. The specific treatment had a distinct therapeutic action, the normal serum had none. They point out that the authors who attributed a similar curative action to normal serum as to the antitoxin were using small—therapeutically insufficient—amounts of the latter.

Pathogenesis of Vaquez' Disease.—Zadek regards increased production of mature erythrocytes as the main pathogenic factor in polycythemia. Increased destruction also occurs as a rule.

Toxicity of Calcium and Diet.—Koopmann determined the lethal dose of calcium chloride in intravenous injection in mice kept on a diet containing definite amounts of various salts. It was about 4 to 9 mg. per hundred grams of body weight. On removing sodium from the diet, the resistance to calcium increased, if a calcium salt remained in the food. The mice died from a smaller dose of calcium after removal of potassium from the food.

Vaccination Against Scarlet Fever.—Strössner used killed hemolytic streptococci for immunization against scarlet fever. The Dick test became negative after a few injections of the vaccine. He concludes that the cocci contain toxin.

Roentgen-Ray Treatment of Melena.—Irle and Schoeneck report recovery of an infant from melena after one roentgen irradiation of the spleen with 20 per cent of the erythema dose.

Jahrbuch für Kinderheilkunde, Berlin

113: 245-366 (Aug.) 1926

Meningitis in Infants. E. Stransky and A. Wittenberg.—p. 245.
*Albuminuria in the New-Born. E. Faerber and Suin de Boutemard.—p. 259.
Nodding Spasm. M. Lederer.—p. 275.
*Horse Serum and Metabolism. I. Watabe.—p. 297.
*Exsiccation and Infection. E. Schiff and W. Bayer.—p. 321.
"Sensitization of Infants to Tuberculin." E. Moro and W. Keller. —p. 326.

Albuminuria in the New-Born.—Faerber and Suin de Boutemard consider albuminuria in the new-born dependent on deficiency of liquid in the nourishment. They studied thirty-four cases and found that it begins after birth and disappears when sufficient amounts of liquid are administered. Acetic acid was regularly present in the urine. There is a parallelism between albuminuria in the new-born and albuminuria depending on loss of water in other conditions.

Effect of Parenteral Administration of Horse Serum on Metabolism and Composition of the Body.—Watabe injected normal horse serum in rats over periods of several months. Doses of 0.5 cc. and more caused an increase in the body weight, especially of fat; the water content of the body decreased. The nitrogen remained the same.

Experimental Exsiccation and Resistance to Infections.—Schiff and Bayer demonstrated in animal experiments that in acute water impoverishment a streptococcus infection could occur under special conditions, with fatal course but without leaving any histologic changes in the organs, although streptococci could be isolated from the blood of the heart.

Medizinische Klinik, Berlin

22: 1323-1358 (Aug. 27) 1926

*Restitution of Spontaneous Respiration. H. Sellheim.—p. 1323.
*Standardization of Female Hormones. W. Blotevogel et al.—p. 1328.
*Neuralgia of Peroneal and Tibial Nerves. F. Kraus.—p. 1330.
*Degkwitz' Measles Serum. K. Erichson.—p. 1332.
*Lead Poisoning. F. Lebermann.—p. 1334.

*Tuberculosis in Children. H. Moro.—p. 1337.
*Treatment of Gonorrhea in Women. A. Loeser.—p. 1338.
Intestinal Lambliasis and Cholecystitis. L. Winkler.—p. 1340.
*Fatal Pyrogallol Poisoning. L. Kislitschenko.—p. 1341.
*Isolation of Typhoid Bacilli. R. Fetscher.—p. 1341.
Treatment of Taenia. A. Fahin.—p. 1342.
Dysentery and War Injury. v. Schnizer.—p. 1344.
Trauma and Tuberculosis. Tschmarke.—p. 1345.
Dislocations and Fractures of Joints. R. Bonn. Supplement. —pp. 99-120.

Restitution of Spontaneous Respiration.—Sellheim's patient had received two injections of a mixture of 0.01 Gm. of morphine with 0.00015 Gm. of scopolamine before induction of spinal anesthesia with 0.15 Gm. of procaine hydrochloride and 0.00015 Gm. of epinephrine. During the laparotomy, one-half hour after the lumbar puncture, the breathing stopped. He ordered artificial respiration by Sylvester's method. Various injections had no apparent influence. Only repeated intracardiac injections of 1 cc. of an epinephrine solution kept the pulse going. The dilated pupils became smaller one hour after the syncope and spontaneous respiration reappeared half an hour later. The patient died after thirteen hours—probably from a hemopericardium due to injury of a varicose coronary vein. Such an accident is rare. Fractures of ribs at the insertion of cartilages, which were found in the woman, occur quite frequently in artificial respiration, especially in older subjects. The case teaches the value of unremitting artificial respiration and of stimulation of the heart in similar accidents. But for the injury of a varicose coronary vein, the patient might have recovered.

Standardization of Female Hormones.—Blotevogel, Dohrn and Poll found a practically constant (2.5 per cent) ratio between the number of chromaffine cells and the total number of ganglion cells in the ganglion of the uterine cervix in non-pregnant mice. The ratio increases in gravidity and reaches 15 per cent at the time of partus. It returns to the previous level within three weeks. The ratio is very low (below 1 per cent) in castrated animals. Beside this, the Nissl substance in the other cells of this ganglion is degenerated. Injections of the female sex hormone induce in these mice a condition similar to that of pregnancy. The investigators claim that the reaction is quantitative.

Neuralgia of Peroneal and Tibial Nerves.—Kraus regards these conditions, even when isolated, as parts of a sciatica. He had good results with electric light baths and galvanization.

Degkwitz' Measles Serum.—Erichson tried the Degkwitz serum for prevention of measles. He does not feel justified in giving a definite judgment, but his experience was sufficient to make him discontinue use of the serum.

Lead Poisoning.—Lebermann observed several cases of lead poisoning—two of them with a slight jaundice—among workingmen cutting steel in a wrecked bridge by the oxygen-hydrogen torch. The best prevention would be removal of the lead-containing coating of the steel before cutting. An acetylene flame is less dangerous in this respect than a hydrogen flame.

Tuberculosis in Children.—Moro regards a sharp, loud expiration over the right upper lobe reaching down to the second rib in front and to the third or fourth spinal process in the back as a probable sign of tuberculosis in children. The tuberculin reaction is rarely negative in such cases.

Treatment of Gonorrhea in Women with Fresh or Living Vaccine.—In chronic gonorrhea in women Loeser injects intramuscularly—not earlier than eight weeks after the acute stage—a vaccine made from the first or second passage of gonococci. The first injection should contain 300,000,000 germs. He gives six to eight increasing doses at intervals of three or four days. If this does not help, it is no use to continue. In such cases he gives a single subcutaneous injection of 0.5 cc. of a suspension of a living culture (wash one agar tube with 3 cc. salt solution). The injection produces a swelling which may have a phlegmonous appearance, but within a week the gonococci have frequently disappeared. The treatment is useless in open gonorrhea.

Fatal Pyrogallol Poisoning.—Kislitschenko's patient, a 12 year old girl, died after a second application of Beck's paste to her face for lupus. Only 10 or 12 Gm. of the paste was used, which might have contained about 2.3 Gm. of pyrogallol.

Isolation of Typhoid Bacilli.—Fetscher utilizes the higher motility of typhoid bacilli for their isolation from the feces. He connects two compartments of a tube by a capillary containing a wick, inoculates the compartment in which the level of the nutrient fluid is lower with the mixture of germs, and makes serial cultures from the other compartment.

22: 1359-1394 (Sept. 3) 1926

Urology and Mineral Water. L. Casper.—p. 1359.
Eidetic Faculty in Adults. K. vom Hofe.—p. 1361.
Atonic Constipation. V. Schmieden.—p. 1364.
Roentgen Treatment of Malignant Goiter. C. Barthels.—p. 1364.
*Injury by Protein Therapy. O. Laufer.—p. 1366.
Renal Hematuria. P. Balkányi.—p. 1367.
Tumors of the Lung. H. Biberfeld.—p. 1371.
Hypersensitiveness and Electrolytes. E. Pulay.—p. 1376.
Treatment of Diabetes Insipidus. E. Vinazzer.—p. 1380.
Occupation and Heart Disease. v. Schnizer.—p. 1380.
Experimental Research on Syphilis. R. Prigge.—p. 1381. C'td.
Committee on Hygiene of League of Nations. B. Möllers.—p. 1393.

Injury by Protein Therapy.—Laufer shows that injections of proteins or colloids are by no means an indifferent therapy. He reports a few impairments of the patient's condition which were very probably due to it.

Munchener medizinische Wochenschrift, Munich

73: 1389-1428 (Aug. 20) 1926

*Infection and the Nervous System. H. F. O. Haberland.—p. 1389.
Epilepsy After Gunshot Wounds of the Brain. Steinthal.—p. 1393.
*Trophoneurotic Ulcer After Cauda Equina Injury. F. Hagen.—p. 1395.
*Paralysis of Recurrent Laryngeal Nerve. F. Kretschmann.—p. 1396.
*Typhoid in the Vaccinated. F. W. Schembra.—p. 1397.
Tissue Cultures. A. A. Krontowski.—p. 1398.
Secondary Hypertrichosis. H. Partheil.—p. 1399.
Iodine Hyperthyroidism. A. Kaffler.—p. 1400.
Fractional Aspiration of Stomach Contents. K. Tiefensee.—p. 1401.
Anthelmintics by Duodenal Tube. H. Schneider.—p. 1403.
"Sedimentation Test." H. Guthmann.—p. 1403.
Physician's Thoughts on Medicine. A. Bier.—p. 1403.
*Therapeutic Spinal Puncture. H. Curschmann.—p. 1407.

Infection and the Nervous System.—Haberland subjected mice and guinea-pigs to various local or general procedures, supposed to act on the nervous system, before infecting them intramuscularly. Immersion of the extremity in hot water, immobilization or injection of physostigmine before infection seemed to shorten the life of the animals. Epinephrine, general anesthesia and local venous stasis apparently protected the animals to a certain extent.

Trophoneurotic Ulcer Years After Injury of Cauda Equina.—Atrophoneurotic ulcer developed in the gluteal region of Hagen's patient nine years after a shrapnel wound near the fifth lumbar vertebra.

Paralysis of Recurrent Nerve.—Kretschmann cured aphonia in two patients suffering from recurrens paralysis by injection of paraffin into the lateral insertion of the paralyzed vocal cord. His technic differs from Brüning's only in the lateral injection. Brüning injects near the free margin of the vocal cord.

Typhoid in the Vaccinated.—Schembra confirms the observation that vaccination does not always prevent typhoid, but mitigates its course. The mortality is especially low in vaccinated subjects (4.3 per cent against 13.6 per cent in the unprotected in the same epidemic).

Therapeutic Spinal Puncture.—Curschmann warns against underestimating the dangers of cisterna puncture. Two deaths occurred at his clinic and an injury to the nuclei of cranial nerves in a third. Lumbar puncture is dangerous practically only with tumors of the posterior cranial fossa. If a puncture is absolutely necessary in such patients, the head of the patient should be lower than the body to avoid aspiration of the tumor into the occipital foramen. Quincke recommends also being ready to inject cerebrospinal fluid or physiologic solution of sodium chloride if the ominous sudden fall of pressure of the fluid to zero occurs. The puncture is of therapeutic value in the eclamptic form of uremia. The results are doubtful in the true "quiet" uremia. It is valuable in epidemic encephalitis; it constitutes an important help in poisoning with methyl alcohol, in which it should

always be used. He believes that it removes the poison. The puncture may save life in acute intoxication with ethyl alcohol.

73: 1429-1470 (Aug. 27) 1926

Disturbances of Vital Instincts. L. R. Müller.—p. 1429. C'td.
*Local Metabolism and Varicosities. W. Grossmann.—p. 1432.
*Urine of Athletes. O. Flössner and F. Kutscher.—p. 1434.
Constriction Grooves on Skull of Fetus from Rigidity of Os Uteri. A. Mayer.—p. 1435.
Schatz-Unterberger's Manipulation. W. Nettesheim.—p. 1436.
Intravenous Treatment with Strophanthin. K. Doll.—p. 1437.
*Altitude Polycythemia and Jaundice of the New-Born. P. Ziegelroth. —p. 1440.
*Sun Bronchitis. K. Klare.—p. 1440.
*Blood Pressure and the Heart. E. Kroschinski.—p. 1442.
Arsphenamine Infiltrates. A. Landesmann and J. Worowitzky.—p. 1442.
Prosthesis of Femur. W. H. Wirth.—p. 1443.
Popular Medicinal Plants. L. Kroeber.—p. 1444.
Examination of Infants' Nurses. M. Klotz.—p. 1445.
Laennec. K. Sudhoff.—p. 1445.
Hygienic Exposition in Düsseldorf. O. Neustätter.—p. 1447.
Sickness Insurance. Futurus.—p. 1449.

Local Metabolism and Varicosities.—Grossmann confirms the observation that blood from varicosities has, as a rule, a higher residual nitrogen content than the blood from the veins of the elbow. There were in two thirds of the cases fewer erythrocytes (by 1 to 2 million per cubic millimeter) in the varices—therefore the assumption that they contain thickened blood is unfounded. The carbon dioxide content was not higher than in other veins.

Urine of Athletes.—Flössner and Kutscher examined the urine from contestants in the Olympic games at Marburg. They isolated 15 Gm. of lactic acid from 6 liters of urine collected after the game. The amount of the hippuric acid was lower than before. Methylguanidine and adenine increased; phenylalanine appeared in the urine. The adenine is apparently not oxidized further to hypoxanthine and uric acid because of the lack of oxygen.

Altitude Polycythemia and Jaundice of the New-Born.—Ziegelroth believes that the polycythemia of the new-born is a reaction to the physiologic low provision of oxygen in intra-uterine life. After birth the superfluous erythrocytes disintegrate and furnish the material for bilirubin.

Sun Bronchitis.—Klare treated children with sunlight, using all precautions. In spite of this he observed in the light blonde type, which is most frequently affected by exudative diathesis, a diffuse bronchitis.

Blood Pressure and the Heart.—Kroschinski recommends auscultation of the heart when measuring blood pressure. He claims that accidental murmurs disappear, while the organic murmurs become louder. The differences are especially distinct while the sphygmomanometer is indicating the systolic pressure.

Wiener Archiv für innere Medizin, Vienna

13: 1-192 (Sept. 1) 1926

Proteins and Viscosity of Serum. L. Petschacher and E. Tropper.—p. 1.
*Interception by Reticulo-Endothelial System. P. Saxl and F. Donath.—p. 7.
*Pathology and Treatment of Pleurisy. W. Nyiri.—p. 35.
Blood Ammonia. M. Taubenhaus and O. Sternberg.—p. 89.
*Angina Pectoris During Insulin Treatment. G. Hetényi.—p. 95.
Reversibility of Stomach Secretion Types. S. S. Simnitzky.—p. 105.
*Asthma, Micro-Organisms and Tuberculosis. H. Grossfeld.—p. 117.
*Pathogenesis of Angina Pectoris. R. Singer.—p. 157.
*Respiratory Metabolism. E. Stolz.—p. 179.
"Iron Metabolism." E. Lauda.—p. 189.

Interception by Reticulo-Endothelial System.—Saxl and Donath studied the relation of various injected substances, especially an emulsion of fat, dyes, and pituitary extracts, to the reticulo-endothelial system. It seems that it absorbs like a sponge all the deleterious as well as the useful substances injected into the blood. Colloidal silver, insulin and pituitary extract block this function. Thyroid extracts accelerate the disappearance of particles from the blood. Injections of peptone or slow bleeding to death may cause reappearance in the blood stream of intercepted particles. The reticulo-endothelial system plays an important—perhaps the most important—rôle in water metabolism. Extirpation of the spleen did not cause a marked delay in the disappearance of a fine oil emulsion from the blood. Hepatectomy added to splenectomy was followed by fatal accumulation of the fat in the lungs in rabbits. The oil rapidly leaves the blood in exophthalmic goiter. It remains longer than in normal subjects in diseases of the liver, sepsis and uremia.

Pathology and Treatment of Pleurisy.—Nyiri demonstrates on a number of case histories the diagnosis and treatment of various forms of pleurisy.

Angina Pectoris During Insulin Treatment.—Hetényi observed grave attacks of angina pectoris in two cases of diabetes during insulin treatment. The attacks could be prevented by simultaneous administration of carbohydrates. He agrees with Büdingen on the injurious effect of hypoglycemia—which may be merely relative in diabetes—on the heart. Great caution is necessary if patients with arteriosclerosis, angina pectoris or myocarditis have to be treated with insulin. Carbohydrates always should be added.

Asthma, Micro-Organisms and Tuberculosis.—Grossfeld observed 215 cases of bronchial asthma. He concludes that the majority of them were of tuberculous nature. He discusses the mechanism of stasis in the bronchial blood vessels in asthmatic attacks and believes that they protect the patient against further development of his tuberculosis.

Pathogenesis of Angina Pectoris.—Singer continued his investigations on the pathogenesis of angina pectoris. He found that the pericardium and epicardium are sensitive to mechanical and chemical stimuli. Faradic currents are felt only slightly by the former, not at all by the latter. No pain could be produced by any one of these stimuli applied to the heart muscle and endocardium. The marked reaction following mechanical and chemical irritation of the coronary vessels lasts only as long as their adventitia is intact. The aorta is slightly sensitive to faradization, moderately so to chemical inflammatory stimuli and highly so to mechanical irritation, if the adventitia is intact. The media and intima seem to be analgesic. Increased blood pressure considerably dilates the bulbus of the aorta. Dilatation probably plays an important rôle in angina pectoris. The vagus does not transmit pain from the heart nor from the aorta. The stellate ganglion receives all the homolateral centripetal sensory fibers. Bilateral extirpation of the stellate ganglion anesthetized the heart and the aorta up to the origin of the left subclavian artery.

Respiratory Metabolism.—Stoltz has, with Pollitzer, confirmed the fact that the basal metabolism is increased in hemolytic jaundice and lymphogranulomatosis. The specific dynamic action of proteins is slight. Leukemia increases the metabolism only in the periods with high leukocyte count. The specific dynamic action is, however, distinct. A polycythemia patient had a high basal metabolism as well as a marked specific dynamic reaction. Splenectomy in various patients at first increased the basal metabolism only. The specific dynamic reaction became evident in the third month and increased considerably in a year. Two years after splenectomy the basal metabolism became normal and at the end of another year the specific dynamic reaction was also normal.

Zeitschrift f. d. ges. Neurologie u. Psychiatrie, Berlin

104: 1-344 (Aug. 31) 1926

Tools and Weapons of the Confined Psychopath. W. Ernst.—p. 1.
*Human Mesencephalic Monster. E. Gamper.—p. 49.
Mental Disease and Accidents. W. Enke.—p. 121.
Psychic Epidemics. S. Somogyi.—p. 157.
Psychoses of the Menopause. O. Kant.—p. 174.
Tonic Neck Reflexes and Cerebellar Tumor. J. Rothfeld.—p. 225.
*Vegetative Asymmetry. M. Serejski et al.—p. 241.
Prophylactic Neuropsychiatry. L. Rosenstein.—p. 249.
New Directions in the Therapy of Neuroses. B. Dattner.—p. 256.
Epidural Space and Cerebrospinal Fluid. W. Schönfeld.—p. 281.
Malaria Treatment of Tabes. H. Hoff and O. Kauders.—p. 306.
Eunuchoidism in the Woman. D. Campbell.—p. 323.
History of the Pia Mater. E. Ebstein.—p. 336.
"Etiology of Epidemic Encephalitis." F. Jahnel.—p. 342.

Structure and Functional Capacity of a Human Mesencephalic Monster (Arhinencephalia with Encephalocele).—In a previous communication (vol. 102, p. 154, of the same journal) Gamper described a three months' old mesencephalic monster from the anatomic standpoint. In this issue he gives an account of the studies made on the physiology of the child during the week which he had it under observation. All the

cranial nerves except the olfactory and optic reacted. The nutritional reflexes were well developed and the vegetative functions were not greatly disturbed. Temperature regulation was deficient. There was no decerebrate rigidity and the postural reflexes were present. By the aid of the latter the child was able to sit up.

Vegetative Asymmetry in Diseases of Endocrine Glands.—Serejski, Frumkin and Kaplinsky report five cases of diseases of the endocrine glands, with occurrence of vegetative asymmetry. The tendency to this condition can be hereditary. In distinct endocrinopathies it is due to changes in the peripheral and central nervous systems. Vegetative poisons proved entirely nonspecific for the phenomena.

Zeitschrift für Tuberkulose, Leipzig

45: 353-448 (July) 1926

Social Factors in Tuberculosis Mortality. W. v. Friedrich.—p. 353.
Autoserum Treatment of Pulmonary Tuberculosis. J. Weicksel.—p. 361.
*Paradoxic Movements of the Diaphragm. L. Dünner and M. Mecklenburg.—p. 365.
Cultivation of Tubercle Bacilli. F. Schmidt and A. Sylla.—p. 370.
Percussion of Apex of Lung. W. Einis.—p. 374.
Mass Inoculation and Tuberculosis Mortality. E. Szalai.—p. 378.
Euphoria in Pulmonary Tuberculosis. E. Hoffstaedt.—p. 385.
Tuberculosis in Cattle in the United States. H. Haupt.—p. 388.

Origin of Paradoxic Movements of the Diaphragm.—Dünner and Mecklenburg explain the origin of paradoxic movements of diaphragm on the basis of changes in the intrapleural pressure. Anatomic and functional changes may be predisposing causes.

45: 449-528 (Aug.) 1926

Brehmer's 100th Anniversary. K. H. Blümel.—p. 449.
Personality of Brehmer. F. Wolff.—p. 453.
Brehmer's Therapy of Chronic Pulmonary Tuberculosis. K. H. Blümel.—p. 457.
*Percussion of Pulmonary Apex. J. Plesch.—p. 471.
Mixed Infection in Tuberculosis. E. Czaplewski.—p. 477.
Sanocrysin in Pulmonary Tuberculosis. H. Poindecker.—p. 484.
Lipoid Therapy in Pulmonary Tuberculosis. W. Freymuth.—p. 493.

Percussion of Apex of Lung.—Plesch employs the following method: He places one hand on the region of the apex while he percusses the sternal notch or seventh cervical vertebra. The resonance of the apex on the side on which the hand is laid will be inhibited, while the apex on the other side gives an undisturbed resonance. By laying the hand alternately over each apex he is able to compare the resonance on the two sides.

Mediko-Biologicheskiy Jurnal, Moscow

2: 5-99, 1926

Influence of Vegetative System on Metabolism. E. Leshke.—p. 5.
Mechanism of Action of Endocrine Transplants. A. A. Lipshiutz.—p. 13.
*Amylolytic Property of Blood and Organs in Endocrine Insufficiency. G. M. Lopatin.—p. 18.
Cerebrospinal Fluid, Blood and Nervous System. L. S. Shtern.—p. 34.
Pathologic Anatomy of Progressive Paralysis Treated by Malaria. M. O. Gurevich.—p. 48.
*Chemical Topography of the Brain. G. J. Gorodisskaya.—p. 61.
Study of Cholesterol Metabolism. L. N. Karlik.—p. 76.

Amylolytic Property of Blood and Organs in Endocrine Insufficiency.—Lopatin estimated the amounts of amylase in the blood serum and organs of 115 dogs. It proved to be 200 times larger in the pancreas than in other organs. Of these, it was highest in the kidney, lower in the liver, still lower in the spleen and heart. The amylolytic property of the serum was greatly reduced after removal of the pancreas; partial extirpation of the pancreas brought about a rise of amylase in the blood serum. Depancreatization considerably reduced the amylase of the liver, kidney, spleen and heart. The amylolytic property of the blood serum increased after suprarenalectomy. This operation was followed by increase of amylase in the pancreas and spleen; it did not stop the gradual decrease of amylase in the blood serum and organs of depancreatized dogs. After removal of the pituitary, there was a late reduction of amylase in the blood.

Lipoids and Total Nitrogen of the Cerebral Cortex of Man.—Gorodisskaya's research was made on forty brains from persons aged from 16 to 72 years. The chemical composition of the cerebral cortex differs for the various regions, as their function differs. The amount of lipoids and of total nitrogen is largest in the motor region, namely in the anterior central gyrus. The lipoids are lowest in the anterior association center, the frontal pole. Psychosensory regions, as the cuneus and posterior central gyrus, presenting a chemical resemblance, contain a medium amount of lipoids. The amount of total nitrogen is higher in the left frontal pole than in the right, the difference being far more pronounced in women. After the age of 50, the cholesterol content of the cerebral cortex increases, while the content of total nitrogen and of phosphorus of the unsaturated phosphatids somewhat decreases. Sex differences and those connected with age are most pronounced in the frontal pole. The more important the function of a certain section of the nervous system, the higher is its content of nitrogen substances and the lower that of lipoids. Lipoids are most abundant in the peripheral nerves; they are less so in the spinal cord, still less in the brain. Further study of the chemical statics and dynamics of the brain may reveal the connection between the psychic and chemical processes in this organ.

Russkaya Klinika, Moscow

6: 3-148 (July) 1926

Malignant Teratoma of Mediastinum. N. A. Buzni.—p. 3.
Blood Platelet Count in Healthy Persons. M. Chirkin.—p. 18.
Diagnostic Value of Blood Platelets in Malignant Tumors. V. N. Sokoloff.—p. 22.
Reserve Power of the Heart and Schwann-Starling's Law. N. A. Kevdin.—p. 25.
Pathogenesis of Pneumonia in Infants. N. M. Nikolaeff.—p. 38.
Abortive Treatment of Malaria. A. I. Germanoff.—p. 53.
Paralysis from Anesthetics. M. I. Rapoport.—p. 66.
*Gumma of Mammary Gland. N. L. Blumental.—p. 77.
*Purulent Processes in the Kidney. A. I. Vasilyeff.—p. 82.

Syphilis of Mammary Gland.—Blumental describes a case of gumma of the mammary gland in a young woman, diagnosed as cancer or tuberculoma. The fact that there were no hypertrophied glands in the axilla and, on the other hand, the presence of a painless swelling in the area of sternoclavicular articulation suggested the diagnosis of gumma. This was confirmed by the Wassermann test. The tumor entirely disappeared under the influence of neo-arsphenamine and mercury. Blumental found only forty-three similar cases in the literature, three of which were in men.

Hematogenous Suppurations in the Kidney.—Within the last three years Vasilyeff treated twelve patients with purulent lesions in the kidney. In eight there was a circumscribed abscess, in the others multiple small abscesses. The suppuration was always limited to the cortical substance; in one case it occurred in both kidneys. The patients were all women who had had a pyogenic infection a few months previously. Pain in the area of the twelfth rib, with absence of lesions of the bladder demonstrable by the cystoscope, was the characteristic feature. Tests of the urine and the kidney function yielded no information that could differentiate the process from other kidney diseases. Nephrectomy was performed in grave cases, as multiple abscesses. In circumscribed suppuration, exposure of the kidney and incision of the abscess gave satisfactory results; in bilateral lesions, decapsulation.

Acta Medica Scandinavica, Stockholm

64: 113-322, 1926

*Cretinism in a South Seeland Village. O. Christensen.—p. 113
*Essential Thrombopenia. V. Jedlička and G. Altschuller.—p. 123.
*Diabetic Lipemia. G. Blix.—p. 142.
*Fatal Form of Poliomyelitis. K. Petrén and E. Sjövall.—p. 260.
Fatty Diarrheas. T. E. H. Thaysen.—p. 292.

Cretinism.—Christensen reports six cases of cretinism or myxedema from South Seeland, five of which occurred in one house. Four developed in the same family, one in another family which bought the house from the first, and the sixth in the immediate neighborhood.

Essential Thrombopenia.—Jedlička and Altschuller describe two cases of hemorrhagic purpura. The thrombopenia alone could account for only a part of the syndrome. Rumpel-Leede's phenomenon was independent of the number of blood platelets. A disturbance of the capillaries—and perhaps of the whole reticulo-endothelial system—is a more important pathogenic factor. Splenectomy seems to have an influence on the capillaries and also seems to stimulate the bone marrow to a better production of blood platelets.

Diabetic Lipemia.—Blix made an extensive study of blood fat in diabetes. The alimentary hyperlipoidemia is no greater than in normal subjects kept on a diabetic diet. It is almost independent of food fat, but seems to be a sequel to the disturbance of the carbohydrate metabolism. Higher degrees were found only in cases of grave acidosis. It is possible that the hyperlipoidemia represents a regulative reaction. Administration of bread lowered the fat content of the blood.

Fatal Form of Poliomyelitis.—Petrén and Sjövall deal with the lethal form of acute poliomyelitis. Death is due to paralysis of the diaphragm as well as of the auxiliary respiratory muscles. In spite of complete respiratory paralysis, their patient was kept alive and comfortable for forty-eight hours in Thunberg's barospirator, which has thus given an undeniable proof of its efficiency.

Acta Paediatrica, Stockholm

6: 1-121, 1926

Psychic Disturbances in Congenital Syphilis. G. Åhman.—p. 1. Summarized below.
*Acute Invagination of the Intestine. Monrad.—p. 31.
*Mumps Meningitis Without Parotitis. A. Wallgren.—p. 53.
*Intracutaneous Tests with Streptococcus Toxins. G. Jacobsohn.—p. 67.
Yellow Atrophy of the Liver in Epidemic Jaundice. C. W. Herlitz and S. Norlén.—p. 87.

Invagination of the Intestine in Young Children.—Monrad reviews 115 cases of acute intestinal invagination. He remarks that the blood and mucus passed per rectum are not mixed with feces and have no fecal odor. They have a peculiar insipid odor which is almost pathognomonic for invagination. The time of the first passage of blood is important for the topical diagnosis. In about 90 per cent of his cases of large intestine invagination it occurred within the first twelve hours; in over one half of his cases of ileocolic invagination it did not appear until twelve to forty-eight hours after the onset. In the ileac invaginations no blood was seen as a rule. His conservative method of treatment—dry taxis followed by a water enema—gave good results in invagination of the large intestine; it must not be used in ileo-colic invagination.

Mumps Meningitis Without Parotitis.—Wallgren reports several cases of probable mumps in which meningitis was the only manifestation of the disease.

Intracutaneous Tests with Streptococcus Toxins.—Jacobsohn tested filtrates from thirty-four streptococcus strains, isolated from cases of various infectious diseases, on individuals the majority of whom were Dick positive. With 80 per cent of the strains the Dick reaction was negative, with only one filtrate was the reaction entirely typical. No pronounced difference was seen between the hemolytic and nonhemolytic strains as regards the frequency of the positive reaction. Hemolytic streptococci were isolated from 46 per cent of apparently healthy throats of children, with no apparent distinction between Dick positive and Dick negative children.

Hospitalstidende, Copenhagen

69: 741-764 (Aug. 5) 1926

Polycythemia Treated with Phenylhydrazine. H. C. Gram.—p. 741.
*Trigeminal Neuralgia. T. B. Wernøe.—p. 749. Cc'n.—p. 765.

69: 765-792 (Aug. 12) 1926

Aphasia in Otogenous Abscess of the Temporal Lobe. R. Lund.—p. 777.

Cooperation Between the Phenomena of Sensory and Autonomous Irritations in Different Forms of Trigeminal Neuralgia.—Wernøe reports four cases, each representing a different type. A man, aged 55, had suffered for seven years from pains in the region of the second division of the left trigeminus. The attacks could be provoked by slight irritation of the skin of the cheek or by chewing and were accompanied by tears in the left eye and hyperemia of the skin of the face. There were pains in the tongue, but the sense of taste was undisturbed. The disease was of central origin. In the second case, in a woman aged 29, the trigeminal neuralgia was localized in the second division on the right side. The pains were of a dull character, and were accompanied by swelling under the eyes. There were a slight difference in the pupils, bilateral conjunctivitis and hyperalgesia of the skin. This and a third case were of peripheral origin. In the latter, a woman, aged 79, after suffering from pain on the right side of the face for five years was relieved by antipyrine. After four years the symptoms returned. The eyes showed a severe conjunctival hyperemia, the region of the second right trigeminal branch was hyperalgesic. The symptoms again yielded to antipyrine. The condition seemed to be of benign nature and dependent on arteriosclerosis. In the last case, in a woman aged 58, there was pain in the inner and outer cheek, the right half of the tongue, the right temple and the forehead, of one year's duration. There was hyperalgesia of the same regions, but no taste disturbances, conjunctivitis, hyperemia or excretion of tears. The origin of this neuralgia appears to have been both central and peripheral.

Hygiea, Stockholm

88: 641-672 (Aug. 31) 1926

*Psychic Disturbances in Congenital Syphilis. G. Åhman.—p. 641.
Projection Apparatus for Microscopic Studies. S. von Wachenfeldt.—p. 667.

Psychic Disturbances in Development of Children with Congenital Syphilis and Investigations of Their Cerebrospinal Fluid.—Åhman studied eighty-six young children with congenital syphilis with and without demonstrable mental deficiency. In 66.7 per cent of the fifteen infants and in 17 per cent of the remaining children there were changes in the cerebrospinal fluid which indicated inflammation of the meninges during intra-uterine life or immediately after birth. To obtain reliable results a series of spinal punctures should be done on each child. Later psychic disturbances may depend on syphilitic changes in the endocrine glands.

Ugeskrift for Læger, Copenhagen

88: 731-750 (Aug. 12) 1926

*Benign Glycosuria. K. Faber.—p. 731.
Treatment of Diabetes and Neoglucose. E. Rud.—p. 738.
*Chronic Polyarthritis and Aplastic Anemia. H. Sørensen.—p. 743.

Benign Glycosuria as Result of Disturbances in the Regulation of the Composition of the Blood.—Faber found that the maximal concentration of the blood sugar in normal persons is usually about 0.18 per cent, independent of the intake of glucose. The maximal value of the blood sugar corresponds usually to the value of the blood-sugar threshold. This explains why in most normal persons it is not possible to provoke a glycosuria by administration of starch. In pathologic disturbance of the blood-sugar regulation a glycosuria may occur without diabetes. When the threshold is low, 0.05 to 0.12 per cent, the blood sugar easily passes it and the result is renal glycosuria. If the threshold is between 0.12-0.16 there is a cyclic glycosuria. The urine is free from sugar in the morning, but after ingestion of carbohydrates, the blood sugar reaches values beyond the threshold and glycosuria results. The threshold varies in different individuals, but is constant in the same person. The low threshold is a constitutional peculiarity of the individual. To find the threshold in diabetics, he treated them until the urine had been sugar free for two to five weeks and then made tests of the arterial blood at five minute intervals. He found the threshold almost constant in the four diabetics studied. To determine whether an incipient diabetes or a benign form of glycosuria is present, it is necessary to study the patient for considerable time. If the patient has constantly shown a blood sugar of less than 0.11 per cent, although the food contains an abundance of carbohydrates, it is probable that the glycosuria is benign and not diabetic in origin.

Chronic Polyarthritis, Gastric Achylia and Grave Aplastic Anemia.—Sørensen reports a case of chronic rheumatic polyarthritis of twenty-eight years' standing in a woman, aged 54. On admission to the hospital, gastric achylia and a severe anemia of secondary, aregenerative type were also found. No blood or parasites were detected in the feces. Under iron and arsenic treatment the hemoglobin rose, the erythrocytes increased from 3.1 million to 6.8 million and the color index from 0.29 to 0.44. The morphologic characters of the erythrocytes were unaltered.